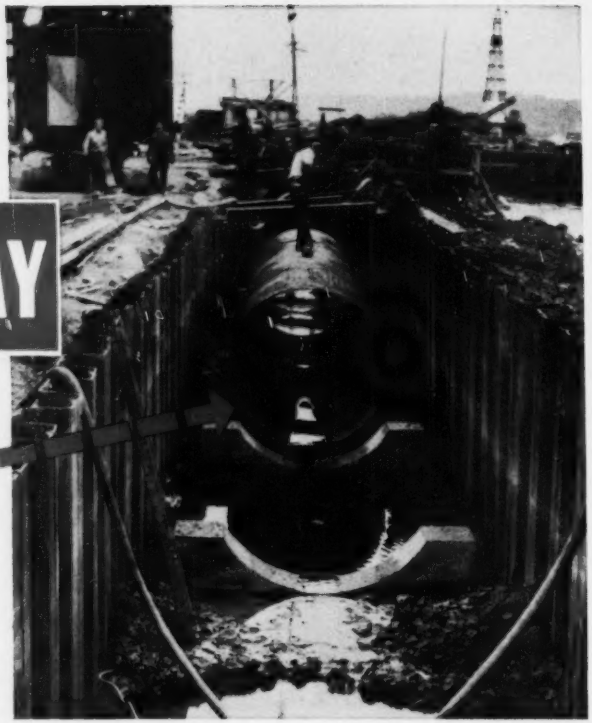
ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

Combatting Corrosion in a BIG WAY



THIS 84 INCH DIAMETER CIRCULATING WATER DISCHARGE LINE IS

BYERS WROUGHT IRON

When Central Hudson Gas & Electric Corporation installed this pipe line to carry circulating water discharge from Danskammer Point Steam Station into the Hudson River, their engineers took no chances on premature failure from corrosion. Genuine wrought iron pipe was specified. The pipe, more than 300 feet long, was fabricated from $\frac{3}{4}$" Byers Wrought Iron plate and is one of the largest wrought iron pipes in existence. This line was designed to handle circulating water from two 60,000 KW units of the four units ultimately planned at this site. The Engineers and Constructors are Burns and Roe, Inc., of New York. The pipe was fabricated by M. H. Treadwell Company, Inc., and was installed by Drilled-in Caisson Corporation.

This selection is in line with accepted engineering practice, which recognizes both the hazards facing underground piping, and the ability of genuine wrought iron to withstand them. Corrosive attack from water and soil are severe, and only a durable piping material will safeguard the owner from excessive maintenance and costly repair. Genuine wrought iron has been so uniformly successful in this service, that it should be carefully investigated when you are building or repairing, and are aiming at maximum life for the installation.

Our bulletin, WROUGHT IRON FOR UNDERGROUND SERVICES, will provide some helpful information. May we send you a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.

Why Genuine Wrought Iron Lasts

This notch-fracture test specimen illustrates the unique fibrous structure of genuine wrought iron—which is responsible for the high corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

BYERS

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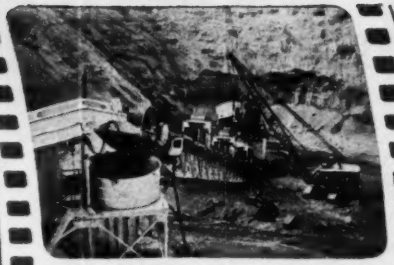
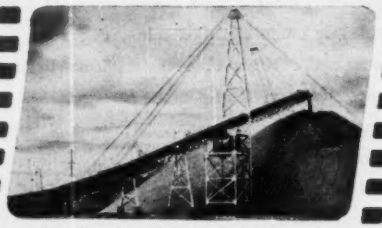
Conveyor Belt System Makes Gold Mine "Pay"



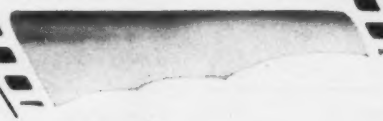
Shovel and Diesel dragline feed ore through grizzly to 60" pendulum conveyor leading to portable crusher at start of 9-belt conveyor system.



Crushed gravel is stock-piled by 700-foot conveyor suspended from tower.

Reclaim tunnel (left) feeds conveyor to washing plant housing jigs, tables, amalgamators and grinders, and classifying units.

Boom stacker transfers sands from washing plant to waste pile.



OUTSTANDING mining operation in the western states, this gold mine has been handling up to 17,000 tons per day of porphyry gold since January 1950—all over a conveyor belt system belted according to the recommendations of the G. T. M.—Goodyear Technical Man.

Secret of the mine's success is the trouble-free performance of its 9-belt system, belted with Goodyear Style B conveyor belting—designed to handle highly abrasive materials. If you have a bulk-load handling problem, it will pay you to consult the G. T. M. for conveyorization recommendations. See your nearest distributor of Goodyear Industrial Rubber Products, or write Goodyear, Akron 16, Ohio.

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ENGINEERING NEWS-RECORD

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Volume 147 AUGUST 2, 1951 No. 5

WALDO G. BOWMAN
Editor

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President, United States Steel Corporation

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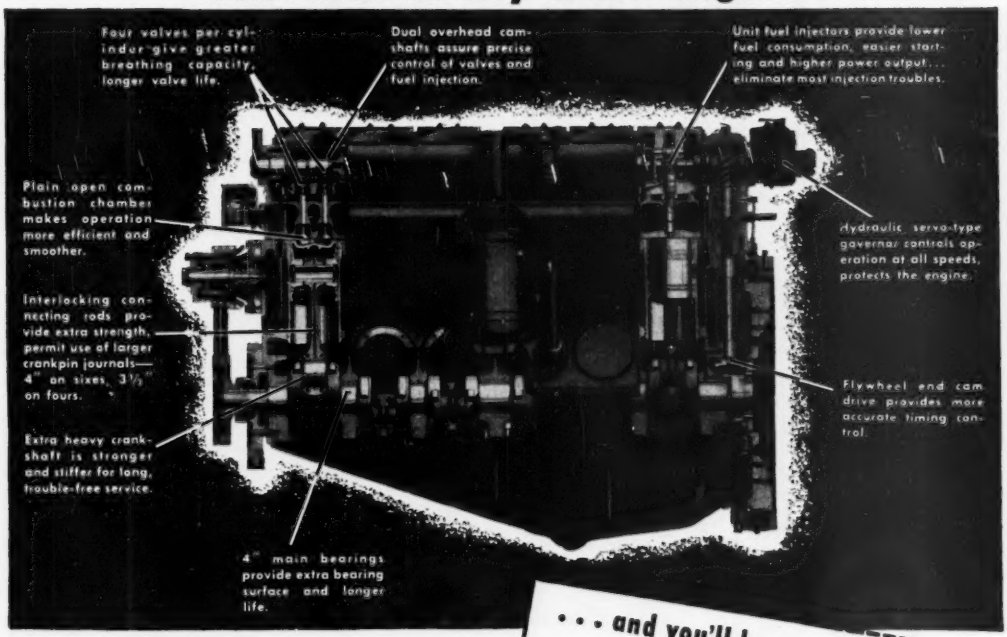
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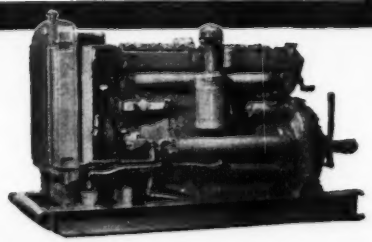

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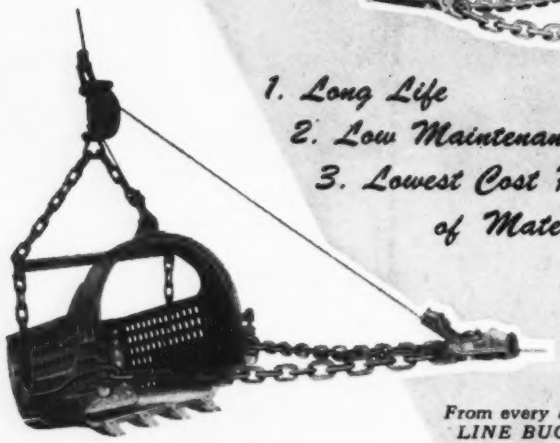

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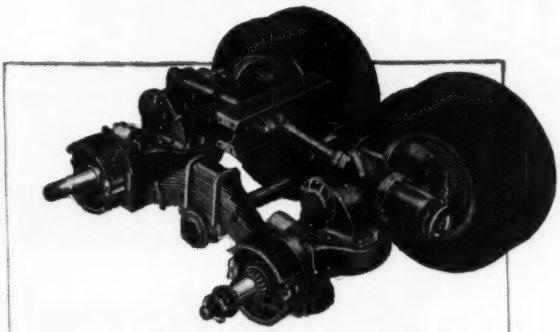

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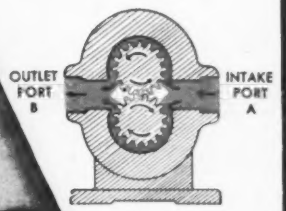

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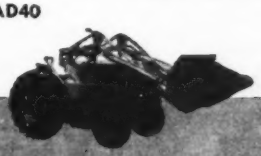
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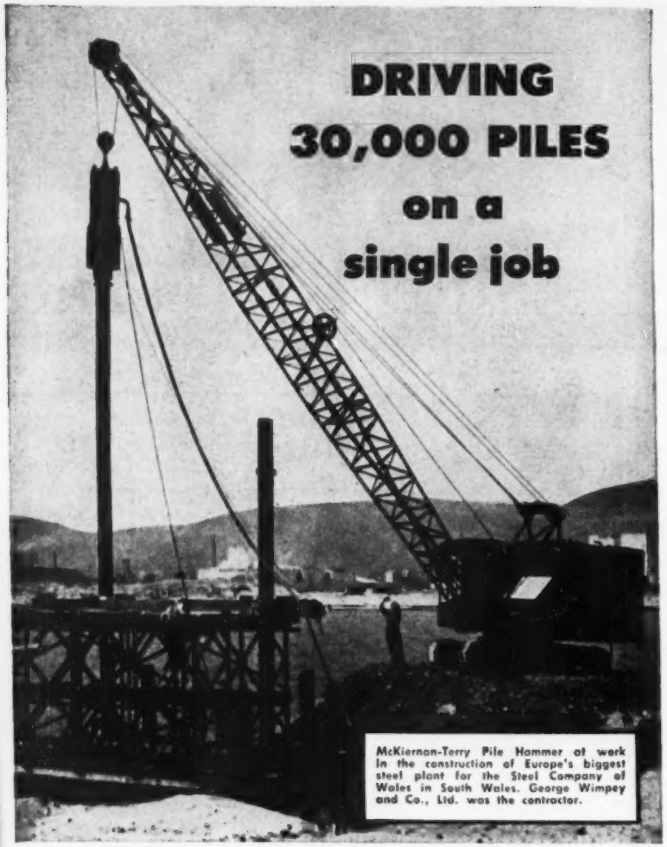
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30,000 PILES
on a
single job
McKiernan-Terry Pile Hammer at work in the construction of Europe's biggest steel plant for the Steel Company of Wales in South Wales. George Wimpey and Co., Ltd. was the contractor.

Racing against the tide . . . driving through thick layers of peat . . . punching down piles in boggy marshlands and shifting sand dunes! These were all part of the day's work for McKiernan-Terry Pile Hammers used to drive *more than* 30,000 *piles* on this vast English project. • The illustration shows a McKiernan-Terry Double-Acting No. 7 Pile Hammer driving 50-ft piles to the shore spans of the reservoir pumphouse approach jetty. In addition, a McKiernan-Terry No. 9-B-3 Hammer drove 45-ft long-section sheet piling to protect the outfall culvert below the high water mark. • Around the world the wide range line of McKiernan-Terry Hammers and Extractors are being used by cost-conscious contractors. 18 sizes are available. Send for bulletin.

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AIK-304

NEWS BRIEFS

• **Departing friends**—In the last 12 months, 138 engineering employees have left the Nebraska State Engineering Department, according to F. H. Klietsch, state engineer. Only 30 of them left for military service. Eighty-seven stated they were leaving to take other civilian positions at higher pay.

• **Race against time**—The bottom cord buckled and the top cord sagged. The middle vertical was twisted. A log had hit the central vertical of a 560 ft multiple span bridge across the Allegheny River at Tionesta, Pennsylvania. In 29 hours the bridge was reopened to traffic after highway maintenance forces moved in to start repair work.

• **No steel**—The department of transport in Ottawa, Canada, announces that the granting of permits for construction of new radio stations in Canada has been discontinued for an indefinite period.

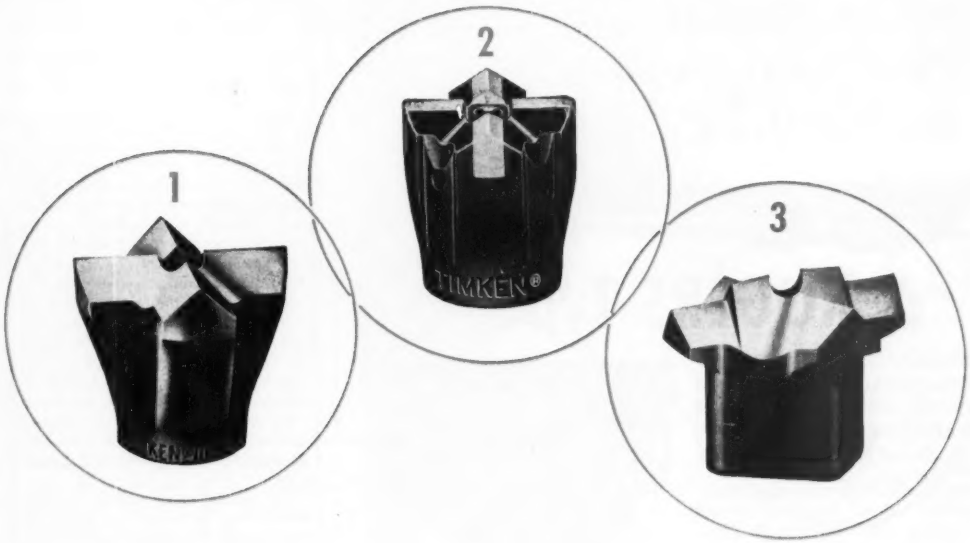
• **Gypsiferous**—On the south side of Sheep Mountain, about 112 miles from Anchorage, Alaska, via the Glenn Highway are gypsiferous deposits which a Department of Interior survey indicates may have 311,000 short tons of rock resembling, containing or consisting of gypsum in three deposits. Drop in at Room 1033 of the Geological Survey, GSA Building, Washington, D. C., or Room 100, Old Mint Building, San Francisco, Calif. for one of the mimeographed copies of the Sheep Mountain report.

• **The ribbon walk**—The mayor regretfully declined when Clayton H. Wiseley of Toledo, O., invited him to attend a formal opening of a 130-ft strip of sidewalk which had been condemned last January. Wiseley had his choice at the time of replacing the walk by private contractor or paving the city for the work. It cost $300.

• **Plenty of nothing**—The President's New England-New York Resources Inter-Agency Committee at its Springfield, Mass., public hearing was pushed for an inland waterway through Connecticut, Rhode Island and part of Massachusetts. Senator Leon W. Brower of R. I. says that $250,000,000 has been spent on inland waterways from Virginia to Texas, while New York and New England have had nothing. The project would cost an estimated $40,000,000.

(*Continued on page 12*)

Only the Timken Company offers all 3 rock bit types



and a complete Rock Bit Engineering Service!

WHAT do you want most from your rock bits—lowest bit cost per foot of hole, greatest possible drilling speed, or other advantages? Whatever it is, you can get it from the Timken Company, the only manufacturer who can offer you all three types of rock bits:

1. MULTI-USE—gives lowest cost per foot of hole when full increment of drill steel can be drilled and when control and reconditioning of bits are correct.

2. CARBIDE INSERT—extremely hard and abrasive ground. Drillers spend less time changing bits.

3. ONE-USE "SPIRALOCK"—for use where reconditioning is impractical or undesirable. Lowest unit cost. Has revolutionary new "Spiralock" union.

Because the Timken Company makes all three types, it is possible for our Rock Bit Engineering Service to make unbiased recommendations to meet your drilling needs. Backed by more than 17 years of experience, it is the world's largest rock bit field organization.

FREE BOOKLET! Shows and describes full line of bits. A helpful guide to rock bit purchasing. Write on your company letterhead to The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

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your best bet for the best bit
...for every job

The MAJORITY of Your
Heavy Hauling Jobs
can be handled
PROFITABLY with...
the POPULAR

ROGERS Type "T"

LARGE CAPACITY IN AN 8 FT. DECK WIDTH—LEGAL IN ALL STATES. 8 TIRES ON 2 ROCKING STUB AXLES WITH LEVEL OR DROP DECK IN 15, 20, 25, 30 and 35 TON CAPACITIES

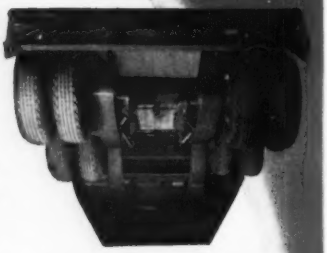
By reason of its versatile adaptability to all kinds of heavy hauling jobs, the Rogers Type "T" has steadily increased in popularity.

It's a "natural" for small and large contractors and haulers.

If you are considering the purchase of one or more trailers, by all means investigate the Type "T".

It packs powerful advantages in a multi-purpose single unit.

Write for full details and catalog.



A worms-eye view of the sturdy rear end and frame construction of the famous "T".

The rear end design of the Type "T" has proved so efficient it has been adopted as standard construction in Rogers Power-Lift Detachable Gooseneck Trailers.

EXPERIENCE builds 'em — PERFORMANCE sells 'em

ROGERS BROS. CORP.
ALBION, PENNA.

Rogers I Beam or Girder Trailer

Briefs . . .

• **Bits and drills**—Self sufficiency in drilling natural gas wells marks a new method of cooling rotary bits. Natural gas from a neighboring well or from a pipe line is fed into the well casing under line pressure to replace water and drilling mud. Also to save from $10,000 to $20,000 per well drilled. Cooling effect results from expansion of the gas. Pressure runs 600 psi.

The Cover

The four engineers, pictured on the cover have played a prominent part in the design and construction of three of the nation's newest and notable bridges. Caught together by a photographer of the Louisville Courier-Journal during the recent ASCE convention in that city three of them are viewing with interested scepticism a lantern slide that obviously shows the favorite project of the fourth member of the group. From left to right, they are Maurice N. Quade of Parsons, Brinckerhoff, Hall & Macdonald, New York; Lewis Hexem of Hazelet & Erdal, Cincinnati and Louisville; and Elmer K. Timby and Homer R. Seely of Howard, Needles, Tammen & Bergendoff, New York and Kansas City.

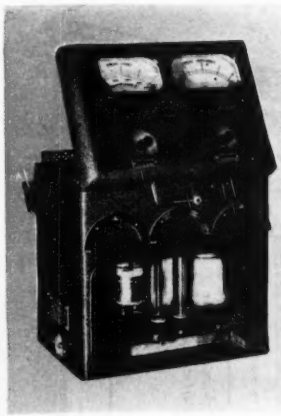
Mr. Quade, whose pride is the York River Bridge in Virginia because of its deep caisson foundations and its twin tandem swing spans, is a partner in his firm and has been a bridge designer since his graduation from the University of Illinois in 1925.

Mr. Hexem holds down the Cincinnati office of his firm which designed the new steel cantilever bridge across the Mississippi River between St. Louis, Mo. and East St. Louis, Ill.

Mr. Timby, formerly head of the civil engineering department at Princeton, a commander in the Navy's Civil Engineer Corps during the war and a 1928 graduate of Ohio State University, is also a partner in his firm. His interest, despite his politely pleased expression in the picture, is in the important new bridge over the Delaware River near Wilmington, its great offshore anchorages and its suspension span of 2,150 ft.

Mr. Seely has an even closer interest in the Delaware bridge, for as resident engineer he has the job of seeing that it is opened on schedule Aug. 16. Formerly engineer for the Port of New York Authority on the construction of some of its large bridges and later deputy commissioner of public works of New York City, he is a 1919 graduate of Cornell and has been on Delaware bridge since it was started.

Not an instrument you buy... but a service we supply



Now *within seconds* you can get an accurate and complete picture of combustion conditions in your furnaces. A Cities Service Combustion Engineer, by applying his *exclusive* Heat Prover, will quickly secure continuous, accurate readings that reveal any oxygen excess or waste combustibles present.

Operators throughout the country, by using these instant readings as their guide, have been improving furnace output and product quality, while saving fuel.

Similar results are possible at your plant. Start the ball rolling today for a FREE Heat Prover test of your furnaces. Simply call or write your local Cities Service office . . . or else return the coupon below.

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Without obligation please send your booklet, "Combustion Control for Industry."

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NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

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HARDSURFACING GUIDE FOR LONGER WEAR

. . . AT 30% LESS COST

LINCOLN'S complete line of hardsurfacing electrodes are *priced at an average of 30% less* than other electrodes . . . yet out-perform any rods now on the market!

The chart shows Lincoln's 12 different types of electrodes, each designed for a specific range of service to resist abrasion and impact. These electrodes not only cut hardsurfacing costs but give superior wear resistance on all types of earth-moving and construction equipment.

Lincoln Hardsurfacing Guide *quickly shows what type of electrode to use to best resist impact and abrasion. Ask for Bul. 469.*

NEW LIFE FOR OLD TEETH

Hardsurfacing for Severe Abrasion. *Dipper teeth are tipped with Lincoln "Tungweld" (tungsten carbide type) electrode. Lower beads on teeth are "Abrasoweld" for severe impact and moderate abrasion.*

ONE SPROCKET DOES WORK OF FOUR

4 Times the Life *is obtained by hardsurfacing worn teeth of power shovel sprockets with "Hardweld 100," reports Al Johnson Construction Co. on Pennsylvania flood control project.*

SEE HOW TO SAVE 30% ON HARDSURFACING ELECTRODES

Bulletin 466, Lincoln Weldirectory for Hardsurfacing, available. Write on your letterhead to Dept. 136,

THE LINCOLN ELECTRIC COMPANY

CLEVELAND 1, OHIO

RAYMOND versus OLD MAN RIVER

Major link in the flood-control system on lower Mississippi River is the 4,200-foot Morganza Floodway Control Structure, 42 miles northwest of Baton Rouge, La. Its 125 bays will have diversion capacity of 600,000 sec.-ft. into spillway at flood stages.

DRIVING 3,700 RAYMOND PRECAST PILES FOR MORGANZA FLOODWAY CONTROL . . .

For the foundations Raymond is casting and driving 3,734 precast reinforced concrete piles, in lengths of 80 to 120 feet. 95 percent are being driven on 2-on-1 batter.

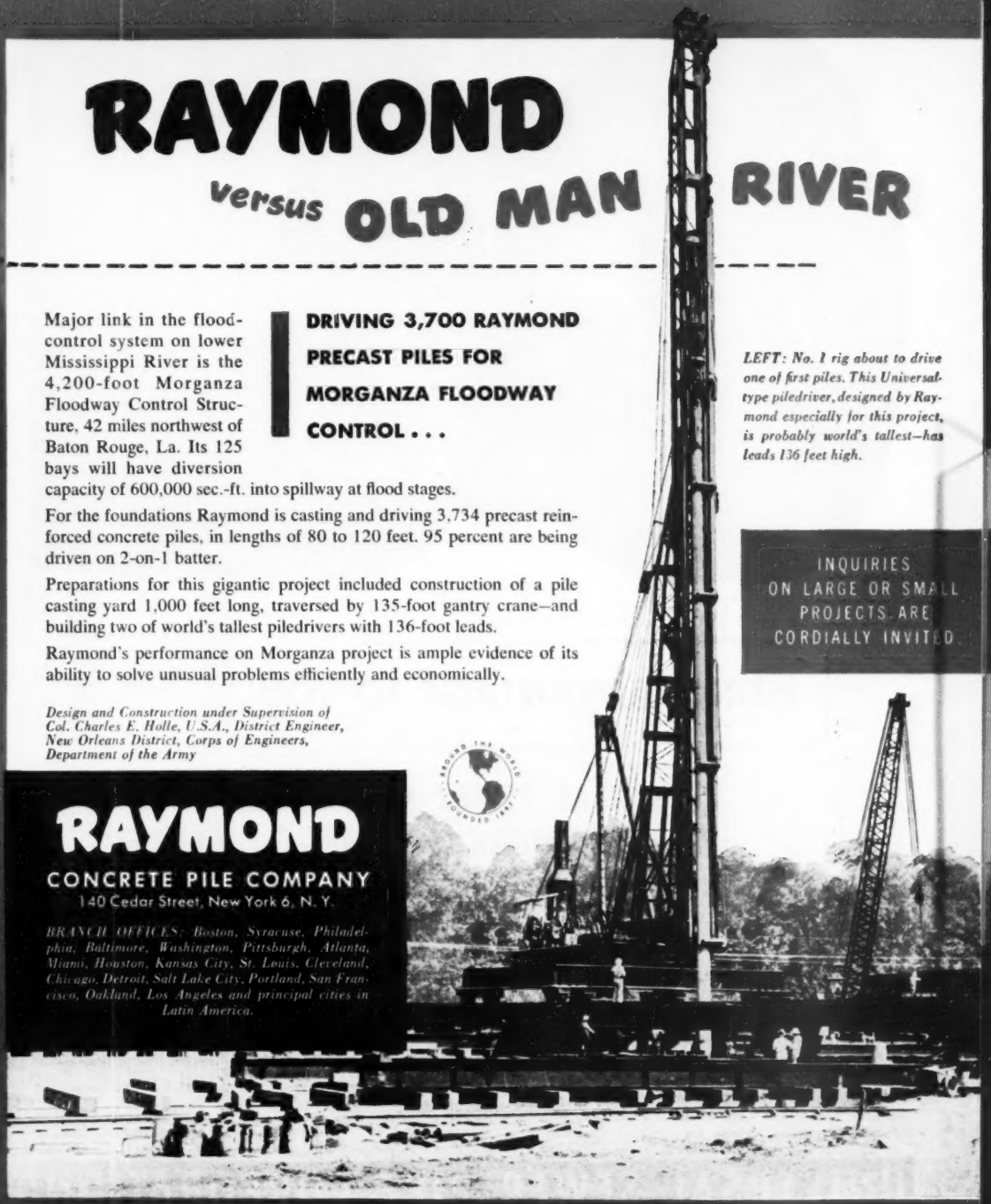
Preparations for this gigantic project included construction of a pile casting yard 1,000 feet long, traversed by 135-foot gantry crane—and building two of world's tallest piledrivers with 136-foot leads.

Raymond's performance on Morganza project is ample evidence of its ability to solve unusual problems efficiently and economically.

Design and Construction under Supervision of Col. Charles E. Holle, U.S.A., District Engineer, New Orleans District, Corps of Engineers, Department of the Army

LEFT: No. 1 rig about to drive one of first piles. This Universal-type piledriver, designed by Raymond especially for this project, is probably world's tallest—has leads 136 feet high.

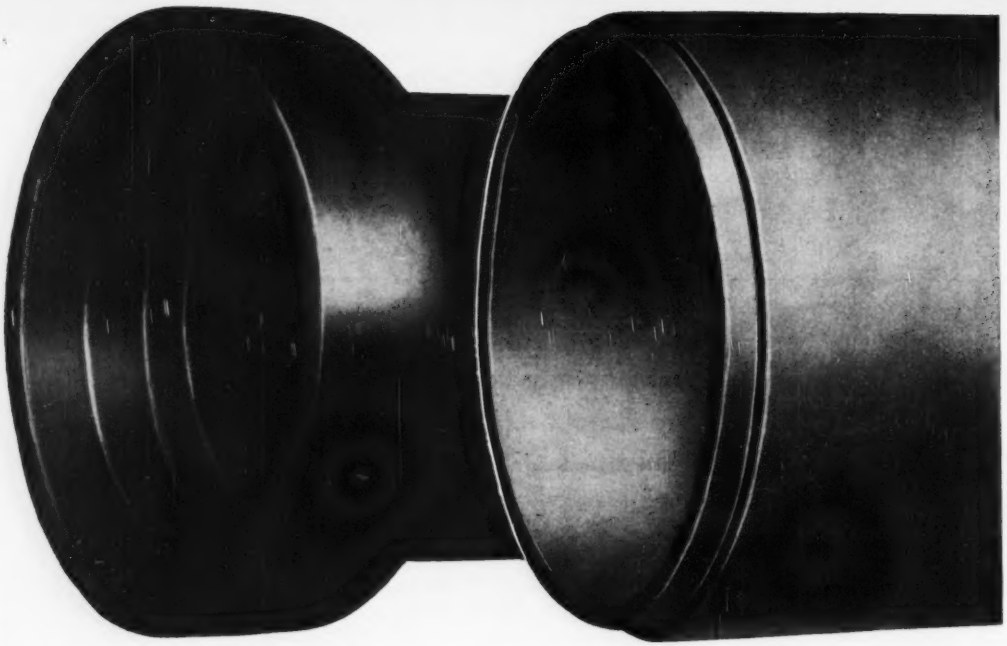
INQUIRIES ON LARGE OR SMALL PROJECTS ARE CORDIALLY INVITED



RAYMOND
CONCRETE PILE COMPANY
140 Cedar Street, New York 6, N. Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Salt Lake City, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.

THE SCOPE OF RAYMOND'S ACTIVITIES . . . includes, in addition to borings for soil investigation, every recognized type of foundation construction—concrete, composite, precast, steel, pipe and wood piles. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements, and cement-mortar lining of water, oil and gas pipelines 4" to 144" in diameter by Centriline Corp., a Raymond subsidiary.



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Offer You Vitrified Clay Pipe—Concrete Pipe

Top quality ... in any quantity required ... from eight large capacity, modern plants. When you shop for sewer, drainage and waste line pipe, it always pays to specify Universal Sewer—U. S. Concrete Pipe.

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Sewer Pipe (Vitrified)	Slipseal Sewer Joint	Flue Lining
Sewer Pipe (Concrete)	Segment Sewer Block	Stove Pipe
Vitrified Liner Plates	Meter Boxes	Chimney Tops
Tylox Flexible Rubber Coupled Vitrified Pipe	Ship Lap Wall Coping	Chimney Pots
Aerodrane Filter Block	Septic Tanks	Fire Brick
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THE CONSTRUCTION WEEK

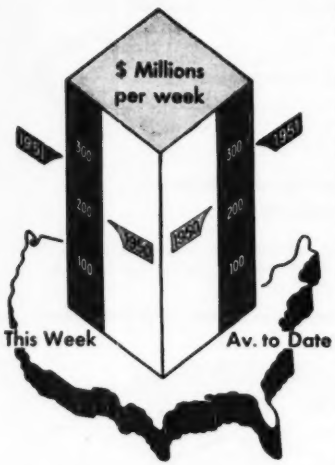
BATTLE REVIVAL—Robert G. Patten of Charlotte, N. C., managing director of the Carolinas Branch of Associated General Contractors, charges North Carolina state highway officials with trying "to destroy the free enterprise construction industry in the state." He claims to have reliable evidence that three top highway officials are attempting to substitute day labor for competitive bidding on highway construction jobs. Patten says that Highway Commission Chairman Henry W. Jordan, Sixth Division Highway Commissioner George S. Coble and Chief Highway Engineer W. H. Rogers, Jr., have talked with Bureau of Public Roads officials in Washington to get permission for construction of federal-aid highways on a day labor basis, as opposed to competitive bidding by contractors. Patten quotes official BPR memoranda advocating the contract method. The AGC group lashed out at Gov. W. Kerr Scott and the highway department two years ago when the state purchased $5 million worth of road machinery following passage of a $200-million bond issue for secondary roads, charging that state officials are planning to handle eventually all North Carolina highway construction by force account.

UNDERGROUND GAS STORAGE—Illinois has passed a law that gives corporations the right of eminent domain to create underground natural gas storage facilities. The Peoples Gas Light & Coke Co., Chicago, a principal proponent, plans to store some 90 billion cu ft of natural gas received from pipelines in a sandstone formation 1800 ft below the surface in Kankakee County.

NAMED FOR A CIVIL ENGINEER—A transcontinental highway would bear the name of a civil engineer—Claudius Crozet—if plans of an organization set up in West Virginia are successful. This group—which calls itself the Crozet Super Highway Commission—has asked Congress to designate some existing and some planned highways extending from Boston through West Virginia to the Pacific Coast at San Diego as the "Crozet Superhighway." Crozet was a French engineer who came to this country in 1816 and later made surveys for roads into what is now West Virginia.

LEANING OUT ON PINE FLAT—A significant fact that heretofore has escaped notice is that cement content for interior parts of the 2,200,000-cu yd Pine Flat Dam on Kings River, Calif., has been cut down to 2¼ bags per yd. This makes it one of the leanest mixes on record where a cement substitute such as pozzolan is not used. The reduction will lower the heat of hydration and, thus, enable the Corps of Engineers to build the dam without internal cooling or concrete grouting. Good quality concrete produced to date by the contractor, Pine Flat Constructors (a joint venture with Guy F. Atkinson Co., Inc., as lead contractor), made the reduction justifiable.

SIGNIFICANT NEW INTEREST—It is logical to expect that one of the nation's largest building firms will soon be in a position to advise its clients on prestressed concrete. J. K. Gannett, vice president, The Austin Co., after a trip to Europe, set up a research project on the process. Next month Austin will test two big prestressed beams it has fabricated. Significantly this new interest comes at a time when structural steel shortages threaten.



Contracts by type of work

	This Week	Cumulative 31 wks 1951	1950	% chge
Waterworks	$4.2	$135.5	$134.0	+1
Sewerage	7.6	190.7	152.3	+25
Bridges	4.5	196.1	231.4	−15
Highways	29.3	704.2	784.6	−10
Earthwork, Waterways	6.3	336.4	300.2	+12
Buildings:				
Public	23.7	1,416.8	1,004.2	+41
Housg., pub.	17.7	534.6	160.0	+234
Housg., priv.	43.3	1,187.5	2,216.9	−46
Commercial	10.5	413.0	577.3	−28
Industrial	82.6	2,651.8	714.9	+271
Unclassified	37.8	1,162.5	773.7	+50
Total	**267.5**	**8,929.1**	**7,049.5**	**+27**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

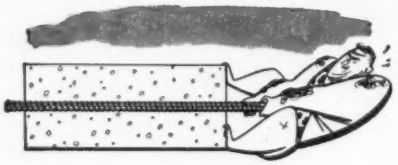
ENR COST INDEX

Index Base = 100		1913	1926	1949
Constr. Cost.	July '51	542.36	260.71	113.70
Bldg. Cost	July '51	400.36	216.42	113.81
Volume	June '51	301	204	145

At the annual convention of the American Concrete Institute in 1949, Committee 208 on Bond Stress proposed changes in design stresses for concrete reinforcing bars. These proposals were made after Bureau of Standards tests proved that certain "improved" reinforcing bars could live up to higher standards.

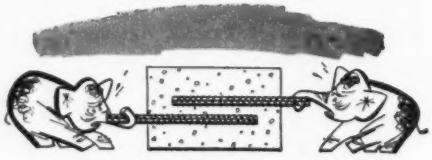
At the 1950 convention, the ACI Building Codes Committee adopted the proposals of Committee 208. And in February 1951, the Institute officially accepted the new building code change.

It is interesting to note that Inland HI-BOND has, for eight years, offered all advantages of higher bonding properties now officially recognized by ACI.



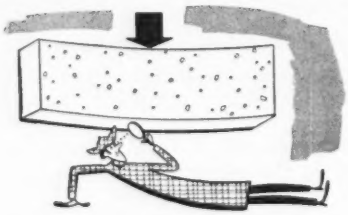
1 Increased bond stresses and greater resistance to slip

See reports on National Bureau of Standards research by Arthur Clark . . . ACI Proceedings, Vol. 43, p. 381; Vol. 44, p. 437; Vol. 46, p. 161; by C. C. Fishburn . . . ACI Proceedings, Vol. 44, p. 289.



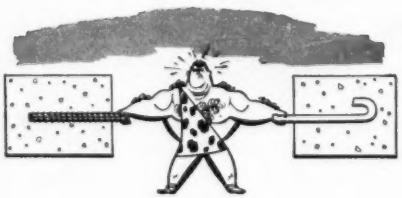
2 Increased efficiency at splices

See reports on National Bureau of Standards research by Ralph W. Kulge and E. C. Tuma . . . ACI Proceedings, Vol. 42, p. 13.



3 Reduced width of tensile cracks

See reports on National Bureau of Standards research by David Watstein and Norman Seese, Jr. . . . ACI Proceedings, Vol. 41, p. 293.



4 Hook anchorages unnecessary in most applications

See reports on National Bureau of Standards research by C. C. Fishburn . . . ACI Proceedings, Vol. 44, p. 289; by F. E. Richart . . . ACI Proceedings, Vol. 45, pp. 97 and 237.

See new ACI Building Code

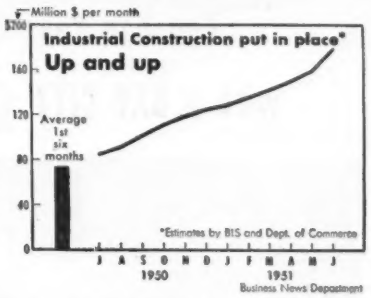
INLAND **HI-BOND®**

The reinforcing bar with the built-in anchorage

INLAND STEEL COMPANY 38 S. Dearborn St., Chicago 3, Illinois

CONSTRUCTION TRENDS

OUTLOOK STILL BRIGHT FOR INDUSTRIAL WORK



A calmer international scene won't mean a drop in industrial building. Although new contracts surely have passed their peak, indications are that contracts—they may fall further—will stay high, and that industrial work put in place will increase as much as the supply of materials will allow.

Two forces promise to keep industrial building high for at least another year. One is the defense effort; it's not going to stop just because of a halt in the fighting. Peace in Korea might slow the defense program down a little, but the steel mills and tank plants will still be built.

• **The Private Side**—The defense program puts a cushion under industrial building. But industry's actual plans are the most important indicator of how industrial construction will go. And, at the present time, it looks as if industry is planning more expansion than ever.

Early this year a McGraw-Hill survey showed that U. S. industry planned a record program of spending on plants and equipment for 1951. Manufacturing companies covered by the survey planned to jump 1951 spending for construction by 79% over 1950.

That was long before peace talks started in Korea. So McGraw-Hill recently rechecked 50 companies included in the original survey to see what changes they were making in their expansion plans. The answer: about half had altered their plans—and most of the changes were increases. Quite a few companies had increased their investment programs by as much as 20%, several by up to 100%.

Some of these increases represent inflation—they don't mean that more building will actually be done. And the increased outlay will not all go for construction; much of it is earmarked for new equipment.

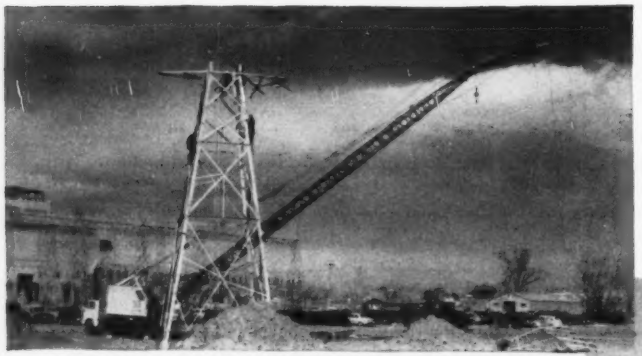
But the important point is that industry is not—as yet—reducing its overall plans for expansion. In fact, half of the companies checked plan just as much capital spending in 1952 as in 1951.

This picture could change in the next few months. Business men have not had much time to consider altering their investment plans since Malik made the first peace offer. But present indications are that plans won't be cut, at least not much. Business men say that they are not expanding just because of the defense effort. They are banking on long-run growth in demand from the entire economy.

• **Outlook**—The real threat to industrial building comes from the supply of structural steel. There is a good chance that Washington may have to clamp down on projects scheduled to start between now and year's end—because projects already under way will take all the available steel in the fourth quarter.

Main effect will be to push some projects along into 1952, keep industrial construction running at a high rate well into, and perhaps right through, next year.

You can take on any kind of lifting job with a BAY CITY CRANEMOBILE



for high lifts . . . There is plenty of balance and stability in this 20 ton capacity CraneMobile to handle long booms and jibs. Here a "180" is reaching out to pick up a prefabricated top section of a 90 foot transmission tower. The worm and worm wheel boom hoist will raise and lower boom and load *only under power* either independently of or simultaneously with other operations.

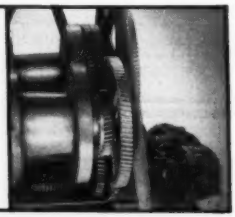
for heavy lifts . . . POWER and WEIGHT are always necessary to pick heavy loads. The BAY CITY CraneMobile has them both as shown here where the 25 ton capacity "190" lifts a massive rotary dryer. When lowering, the operator will engage the power load lowering device which permits precision controlled lowering against machinery and engine.

for twin lifts . . . Frequently an exceptionally heavy load requires cranes to operate as a team, as in this illustration where two 20 ton capacity CraneMobiles, working on a new railroad underpass, handle two girders each weighing 37½ tons. This job calls for *precision booming* and *precision load lowering* — BAY CITY furnishes both. For complete CraneMobile facts write us today. BAY CITY SHOVELS, INC. BAY CITY, MICHIGAN.

CHECK LIST

- 20-25 Ton Capacity
- Pin-Connected Boom
- Hi-Collapsible Gantry
- Independent Power Boom Hoist
- Precision Power Load Lowering
- Removable Counterweight
- Specially Designed Carrier
- High Road Speeds

power load lowering . . . A specially arranged Power Load Lowering mechanism for accurate control in lowering heavy loads is standard equipment on CraneMobiles. This device, independent of the boom hoist, automatically lowers the load at about one inch per second on six parts of line without use of brakes. The mechanism can be quickly engaged or disengaged.



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BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

Basic thinking on highway safety

WHETHER OR NOT there is agreement with the claimed advantages of reversing the directions of traffic flow on dual highways, as has been proposed for the Ohio Turnpike, (ENR July 26, 1951, p32), it must be admitted that the idea is an arresting one. The background of this proposal is the result of singling out the chief causes of accidents on divided highways and then seeking their elimination without regard to custom or precedent. In doing this, the J. E. Greiner Company demonstrated an approach to the problem of highway safety that is highly praiseworthy. Such really basic thinking is too rarely practiced, not only in the highway field but elsewhere.

In this instance the Greiner engineers went even farther and devised a complete layout for the Ohio Turnpike and its service facilities that was based on their new thinking. This they have proposed to the Ohio Turnpike Authority for adoption. Thus to offer to defend one's convictions also is praiseworthy.

The resulting discussion will be in the interest of safety on the highways, regardless of its outcome.

Putting friction to work

ENGINEERS generally regard friction as a nuisance force that lowers the efficiency of their machines. Therefore, it is intriguing to learn that structural engineers have found a way to make friction useful.

High-tensile steel bolts are used to clamp the components of a joint together under high pressure. This creates sufficient frictional force between contact surfaces to resist the shear. The result is a connection better able to withstand fatigue loading than ordinary riveted joints—and one that shows possibilities of being more economical, as explained on p 35 of this issue.

Strangely enough, despite this development, the fundamental laws of friction are still controversial. One school of thought holds (1) that frictional force is proportional to the total force acting normal to the sliding surface, and (2) that the frictional force for a constant load is independent of the area of contact. Another group contends (1) that frictional force is independent of the total force acting normal to the sliding surface and (2) that the frictional force, believed to be principally due to molecular attraction, is directly proportional to the actual area of contact. (See "What About Friction?" Part II, by Frederic Palmer, American Journal of Physics, Sept, 1949, p 327.)

With the fundamentals still being debated, the difficulties involved in developing an "exact" design method for friction connections can well be appreciated. However, engineers need not wait for an exact method. The specification for connections made with high-tensile bolts, developed by the Research Council for Riveted and Bolted Joints, presents a simple, conservative procedure based on laboratory tests and field observations, which can be used with confidence. It enables friction connections to be designed like riveted connections, with an allowable "shear" stress assigned the bolts. Admittedly, this design criterion is imaginary, but its application to the new-type connection has the advantage of being one with which engineers are already familiar.

Notable careers

TWO PROFESSORS DIED LAST WEEK who left their imprint not only on the fortunate students who came under their tutelage but upon the practice of engineering as well.

Frank Richart, at the University of Illinois, carried on in the great tradition of his pioneering predecessor, Arthur N. Talbot, in furthering the development of reinforced concrete. Among other things his research work on spiral reinforced columns brought the first vestige of logical and scientific design to these important elements of building framing, contributing both to the safety and economy of construction. Normally quiet and self-effacing, Prof. Richart could, however, be argumentative, firm and convincing when an issue was at stake, as, for example, in the formulation of specifications by the American Concrete Institute and the American Society for Testing Materials. His untimely death at the age of 59 deprives the profession of one of its forceful leaders.

A leader, too, was Boris Bakhmeteff of Columbia University, whose specialty was hydraulics, but whose field was human relations. Deeply scientific, he was an equally great salesman, and used his talents to promote the value of research. Assertive and talkative, he was never garrulous and thus was much sought after and listened to. He carried out important commissions as a consulting engineer, was constantly being appointed to engineering committees and commissions having high-level dealings with government and business. So actively and enthusiastically did he work that age and Bakhmeteff were never thought of at the same time. He was a surprising 71 when he died.

These were two notable careers. Professors Richart and Bakhmeteff were fine teachers, but they also found time to contribute to the well being of the profession and the advancement of engineering knowledge in a very practical sense. The example they set is fortunately not unique among professors of engineering. But it is outstanding enough to give renewed encouragement to their colleagues in teaching, and to warrant praise from the practicing engineers who have benefited from their contributions.

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ENGINEERING NEWS-RECORD

AUGUST 2, 1951 VOL. 147 NO. 5

See drastic cut in starts as DPA chops allotments

Heavy cuts by Defense Production Administration in fourth-quarter metals allocations signal tight controls of new construction starts — Military work may not be affected.

Construction starts will probably drop to a new low in the final quarter of this year. That was the prospect in Washington last week as the Defense Production Administration confirmed the criteria to be followed by claimant agencies in issuing steel, copper and aluminum allotments for the last three months of 1951.

Only overriding defense need for the product or service to be turned out by a new plant or structure will be considered if a claimant agency is authorized start of that plant or structure in the fourth quarter.

Under the new CMP construction regulation coming out this week, very few jobs will be able to start without that authorization. Limits and restrictions to be set in this week's amendment of CMP-6 will bar all but the smallest jobs from getting under way without approval by the responsible claimant agency or industry division of the National Production Authority.

• **Military excepted**—Military projects are the one bright spot in the picture. They will likely save contract awards from dipping near zero in the fourth quarter. The military services make their own rules. They won't be too much bound by DPA regulations.

Then, too, Congress will in the next month or so pass authorizing legislation for some $6 billion of new military works, and fuel it with about $4 billion of appropriated cash. This bonanza may step up the military contract awards program. That program is able even now to proceed at its June rate, under continuing resolutions adopted by Congress. The military have many urgent projects that they want to get started.

• **Civilian outlook thin**—On the civilian side, however, the outlook for fourth quarter awards is thin. Claimant agencies will apply the new criteria strictly. And the effect won't wear off with the fourth quarter. Jobs deferred then may have to be postponed again in the first quarter of 1952—and possibly in the second.

Structural steel is the product that will pinch construction, as has been said before (ENR July 12, p. 23). Copper and steel plate are others.

• **Allotment picture**—DPA last week passed out its fourth-quarter allotments to claimant agencies. In every field, the program has been cut.

Here are the allotments for the agencies that handle construction programs, stated in (1) tons of steel, (2) pounds of copper, and (3) pounds of aluminum. (The slice of steel tonnage allotted for structural shapes has not been announced; DPA has given it to each claimant as a percentage of the total carbon steel allocation.)

To the Defense Department: (1) 1,964,000 tons, (2) 205.8 million lb, (3) 168 million lb; to the Army (presumably for civil works of the Engineer Corps): (1) 32,634 tons, (2) 1,260,000 lb, (3) 300,000 lb; to the Atomic Energy Commission: (1) 183,403 tons, (2) 7,160,000 lb, (3) 7,559,00 lb.

To the Federal Security Agency, for schools: (1) 94,614 tons, (2) 2,881,000 lb, (3) 15,000 lb, and for hospitals: (1) 71,299 tons, (2) 2,190,000 lb, (3) 500,000 lb; to the General Services Administration, for federal buildings: (1) 19,920 tons, (2) 600,000 lb, (3) 225,000 lb; to the Veterans Administration, for its hospitals: (1) 11,041 tons, (2) 501,000 lb, (3) 400,000 lb.

To the Housing and Home Finance Agency, for residential construction: (1) 180,000 tons, (2) 17,456,000 lb, (3) 500,000 lb; to the Interior Department, for reclamation projects and similar works: (1) 10,000 tons, (2) 256,000 lb, (3) 37,000 lb.

Larger slice goes to the Defense Electric Power Administration, which has charge of all power projects: (1) 289,176 tons, (2) 80,852,000 lb, (3) 35,500,000 lb. Similarly the Defense Solid Fuels Administration gets, for coal mining: (1) 25,615 tons, (2) 215,000 lb, (3) 31,000 lb, and for coke ovens: (1) 18,135 tons, (2) 535,000 lb, (3) 70,000 lb. The Defense Minerals Administration is allotted: (1) 41,395 tons, (2) 1,435,000 lb, (3) 140,000 lb.

• **Highways cut**—Highway allotments are cut even below the reduced amounts allowed for the third quarter. The Bureau of Public Roads will apportion among the states for all road and street work: (1) 250,050 tons, (2) 1,150,000 lb, (3) 520,000 lb. For airport and air navigation work, the Civic Aeronautics Administration also is cut to: (1) 6,190 tons, (2) 741,000 lb, (3) 20,000 lb.

(Continued on page 24)

OPS juggles construction price rule

Vincent B. Smith
Washington Staff

Construction contractors and the Office of Price Stabilization are trying to figure their way out of a thorny thicket. A new industry advisory committee—representing the principal categories of contractors—met last week with OPS to thresh out the prickly problems of a special ceiling price regulation for construction.

Committee members came away from the meeting without anything concrete in hand. They had hoped to learn something definite at the meeting, but OPS failed to produce a draft of the proposed regulation. Instead, it offered only principles and ideas. The committee spent the day kicking those around.

About all OPS would say was that it hoped to put out a regulation in ten days or two weeks. That would mean by Aug. 10 at the latest, but OPS may not meet its goal. The industry committee may or may not be consulted again about the regulation; OPS officials would make no promise. A reasonable conclusion is that there won't be another meeting of the committee before the price regulation comes out.

• **Disappointment**—OPS disappointed the committee at last week's session. The industry men had counted on seeing a tentative draft of such a regulation. They had reason to expect as much. An industry task force group—made up of representatives from the chief categories of contractors, both general and mechanical—had worked

(Continued on page 24)

OPS juggles price rule . . .

(Continued from page 23)

ten days on a suggested draft for OPS.

Contractors on the new OPS advisory committee had hoped to see an agency draft that would embody most of the suggestions of the industry task force. OPS had given some support to that hope. The acting head of the Building Materials Branch, which is handling the construction regulation in OPS, had told ENR that the agency was considering and following the recommendations of the industry group—probably to a substantial degree.

(Walter H. Acheson, acting director of the branch, was new on the job last week. He had been shoved in to fill the gap when Fred Schwarz, former head, was summarily dismissed July 20. Acheson—a ready-mixed concrete and building materials dealer from Urbana, Ill.—is favorably regarded by the contractors generally. Some of the mechanical contractors feel that Schwarz got brusque treatment—was made a scape-goat for higher-ups—and they have interceded for him informally. But the general contractors want to see Acheson kept on the job—and the name of his branch changed to Construction instead of Building Materials.)

Mechanical contractors—particularly the electrical group—considered the industry task force draft better than MPR 251 of War II. The general contractors were not so happy about it—or about the prospects of its being adopted by OPS.

• **Better than CPR 34**—H. E. Foreman, managing director of the AGC, for example, merely hopes that the regulation will bear some resemblance to the industry draft. He agrees that anything will be better than operating under CPR 34—the May 16 ceiling price regulation for the service trades. The general contractors have never conceded that they were bound by CPR 34.

In fact, there was strong doubt on that point even in OPS circles until recent weeks. The agency's chief counsel, Harold Leventhal, then instructed OPS field offices that CPR 34 should be enforced against construction contractors, as well as against the service trades.

Electrical and mechanical contractors were more willing to admit that Leventhal's decision settled the issue. OPS kept telling the contractors that they had small choice: If they did not operate under CPR 34, they had to go back under the general price freeze of Jan. 26. OPS stressed the advantages of CPR 34; it gives the contractors a better break than the freeze order.

To get out from under these hampering regulations, the contractors tried to push through a tailor-made construction price regulation by Aug. 1. They did not get far at OPS until they told Eric Johnston, economic stabilizer, that his own electrical firm was in violation of the law, along with the rest of the contractors. Johnston then buzzed DiSalle to do something for construction.

The electrical contractors hope that the tailor-made regulation will work. The general contractors still feel that price regulation for the construction is unrealistic and unworkable.

• **Details on costs**—Under the proposed order, contractors will be able to add on their increased costs since the base period (Dec. 19-Jan. 24), but they will have to take a squeeze on profit margins. For unit-price items used by some contractors, such as house wiring at so much an outlet, the price would be set at the base period level plus the increase in prime costs.

OPS proposes three classes of costs: primary, secondary and incidental. Materials and labor are primary costs.

General contractors are not satisfied with OPS proposals. Foreman says the regulation should be retroactive: that is, apply to jobs under construction as well as to new jobs. The AGC has recommended, too, that all public-works contracts let on a competitive bid basis be exempted—also, all contracts that are subject to renegotiation.

In fact, the AGC contends that all construction should be decontrolled except jobs like painting and roofing done for home owners or home builders.

• **Paperwork**—The new regulation will require contractors to do a lot of paperwork. One small example is the proposed rule on contingencies. This item could not be added as a percentage of the total bid price. Instead, the allowance for contingencies has to be carried back to the unit prices in the base period and distributed among all those unit costs used in estimating bid prices at that time. Then those unit costs will be the base for figuring the allowable unit costs under the proposed CPR.

Profit margin would shrink under the regulation. Suppose that in the base period you added 10% for profit. Assume further that your costs—materials and labor—have gone up 10%. Since then, making them now 110% of base period costs, including the contingency allowance already mentioned. You would now be allowed to add 9% for profit.

Boris Bakhmeteff dies, authority on hydraulics

Boris A. Bakhmeteff died July 21 in Brookfield, Conn., at the age of 71. Consultant, author and professor, he had been a leader in the field of hydraulics—principally open-channel flow and flow through granular media.

His early distinction on these shores was gained in 1917 upon arrival from Russia as first Russian ambassador to the United States after fall of the Czarist regime—a post he filled until 1922. He had earlier been Secretary of State in the Kerensky provisional government and before that a professor at St. Petersburg Polytechnic Institute.

He conducted his consulting practice in New York City starting in 1922, and since 1931 had been a professor of civil engineering at Columbia University. Books he authored include "Varied Flow of Liquids," "Hydraulics of Open Channels" and "Mechanics of Turbulence". His paper in 1947, "The Mechanism of Energy Loss in Fluid Friction," won the Norman Medal of the American Society of Civil Engineers, of which he has been a member since 1917.

Cut in starts . . .

(Continued from page 23)

Biggest of the separately identified construction allotments go to the Facilities Bureau of NPA, for industrial and commercial construction: (1) 653,725 tons, (2) 7,100,000 lb, (3) 22,000 lb.

NPA's Water Resources Division also gets a substantial allowance for sewer and water projects: (1) 164,950 tons, (2) 4,050,000 lb, (3) 175,000 lb.

It must be emphasized that only a percentage of the total steel allotments given here can be used for structural shapes. Highways, for example, need half their steel requirements in the form of structural shapes, but this percentage has been reduced in the DPA fourth quarter schedule.

• **Hard to figure**—What will the new regulation mean in the way of deferred contract awards for the fourth quarter? The answer is nebulous. Last year ENR reported $3.4 billion of contract awards in the final quarter.

This year new construction would not be expected to boom along at that rate. But it is altogether possible that the DPA order may defer the award of $2 billion of new contracts.

And, as has been said, the tight supply situation won't disappear by the end of the year. It may be July 1952 before the structural steel supply eases appreciably.

Pick raises Kaw flood damage estimate to $990 million; called conservative

Army sticks to claim $300 million could prevent recurrence —Hydrologists solving for discharge figures

Maj Gen. Lewis A. Pick, Army Chief of Engineers, raised the estimate of July flood losses last week to $990 million in the two states of Kansas and Missouri. He announced the higher figure ($875 million earlier) during his second flood visit to Kansas City to attend a public meeting called by the governors of the basin states.

Spokesmen for the Corps of Engineers regard the figure as conservative. It is based, they explain, on physical damage to property, without including other costs such as payroll and production losses. Admittedly, the estimate is tentative and rough, but it is assembled and cross-checked on a basis of field reports by engineers and technical people who are familiar with the areas for which they are reporting.

Included in the items of loss for the earlier Army Engineer estimate of $875 million were such things as 17 major bridges and hundreds of smaller bridges lost, 87,100 pieces of railroad rolling stock inundated or almost totally destroyed, and 16,000 livestock lost or stranded. Contributing to the same estimate were losses caused by the flooding of 2,000,000 acres and the destruction to homes and business places involved in the displacement of 518,500 people.

Army engineers stand by their earlier claim that an additional $300-million investment in their recommended flood-control works for the Kaw River Basin would prevent a repetition of the late disaster. They admit that the claim is based on certain assumptions, but they believe those asumptions are sound.

• **Substantiating evidence needed**—The Engineers think that the recent deluge fits the pattern of the "standard project flood" that they used in planning the flood-control program for the Kaw River Basin. The facts have to be checked, they readily admit. At the moment, they don't even know the volume of the latest flood. Until such basic facts as flood volume are determined, they cannot state exactly what effect the flood-control program would have on another great flood like last month's.

Right now, the Corps of Engineers has pulled together in Kansas City what it considers the best hydrologists in the country. Their job is to determine the hydrologic facts about the flood. It will be 30 to 60 days before the answers are known.

Army Engineers are confident they have planned their flood-control structures—dams, dikes and other protective works—at the right places in the Kaw Basin. Also, they feel satisfied that the July storm in the basin compares with several of record that were taken into account in preparing their flood-control program.

But their claim that the program is adequate to control a flood as big as July, 1951, raises questions in the minds of many engineers outside the Corps. After all, the Army Engineers estimated last month's peak Kaw River discharge at Kansas City as 508,000 cfs; the standard project flood that the Army projected as the great flood of rare occurrence for their Kaw Basin study called for only 370,000 cfs at Kansas City.

• **The big questions**—Would the planned flood-control works reduce the July flood to bankful stage? Are the flood loss figures of the Army Engineers sound and reasonable, or are they inflated to make an impression on Congress when the Corps seeks project approval—and cash?

No final and conclusive answers can be given now to the first question. Some Army Engineers are confident that the complete flood control program would reduce the July discharge by the same amount as their 1947 report estimated for the standard project flood. Such a reduction would apparently lower a big flood like last month's to bankful stage or less.

Thus, for the standard project flood of 370,000 cfs at Kansas City, the Kaw Basin program would reduce the discharge to 120,000 cfs. Applying this reduction (of 250,000 cfs) to the July 14 peak of 508,000 cfs, as estimated by the Corps of Engineers, would cut the flow to 258,000 cfs. Flood protection works included in the program contain it.

Not all members of the Army's Corps of Engineers are ready to assert flatly that the Kaw Basin program—in full operation—would have cut the July flood to manageable proportions at all protected places. These men will wait until they get the answers of the hydrologists before they make any such definite claims. They feel the findings will substantiate them.

• **Damage estimates, how good?**—Estimated flood loss, close to $1 billion, has raised some doubts as to the Army Engineers' methods of appraising damages and losses. How realistic were the flood loss estimates of earlier years, used to justify the Kaw Basin program in the 1947 report, long before the nation's greatest flood disaster hit Kansas and Missouri last month?

Only one other federal agency, the U.S. Weather Bureau, surveys and reports annual flood losses by river basins. Comparison of Kaw River Basin losses as reported by the Weather Bureau and the Corps of Engineers for six years in the period 1935-45 furnishes only a rough cross-check. Losses reported by the Weather Bureau represent the entire basin with the important exception of the two Kansas Citys, while the figures of the Engineers are limited to rural losses.

In their definitive measuring of flood losses, the Army Engineers include indirect costs as well as physical

(*Continued on page 27*)

Mo. Basin asks money, project ban lift

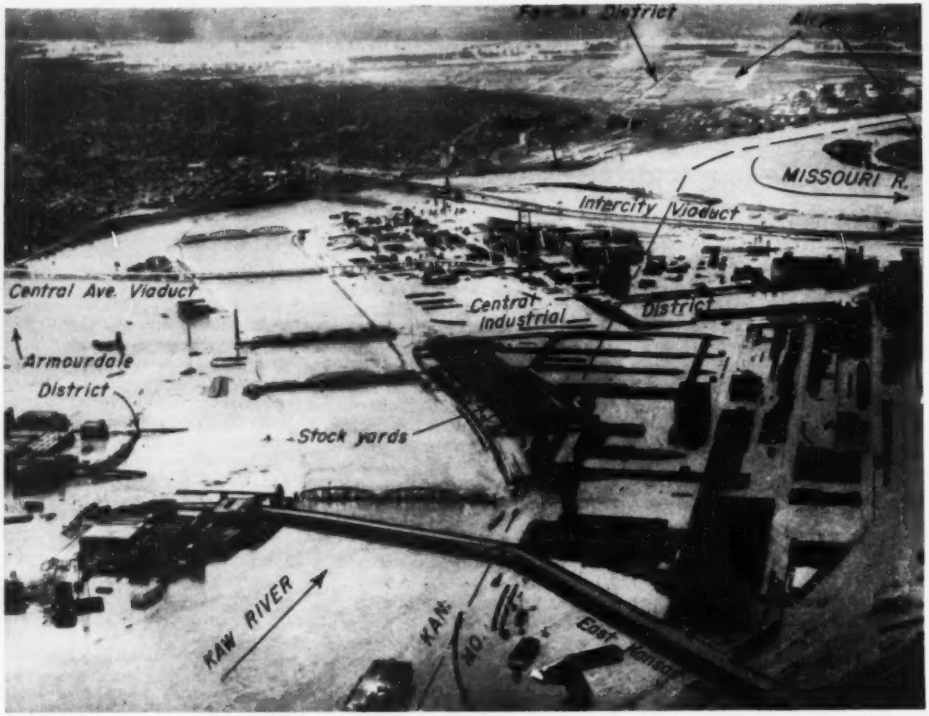
A grim Missouri Basin task force swept down on Washington last week. Its prime purpose: to urge Congress to start appropriating money at once for flood-control works that would prevent another inundation like last month's Kansas-Missouri disaster.

The basin spokesman made their plea to a receptive group—the Public Works Subcommittee of the Senate Appropriations Committee. Many of the committee members had just returned from an inspection of the flood area. The entire group was in a mood to overrride the ban on new projects starts and to vote money for additional flood-control works.

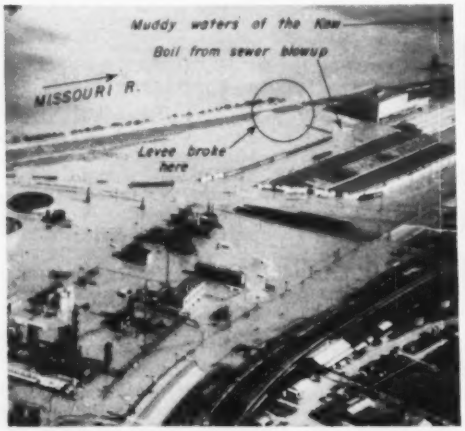
Governors Peterson of Nebraska and Anderson of South Dakota carried the basin message to the committee, speaking for people of the disaster area, who had gathered i a public meeting—and put their demands in the form of resolutions—at Kansas City the previous day. Governors of hard-hit Kansas, Missouri and Oklahoma could not leave their flood-shattered region to go to Washington.

Army Secretary Frank Pace gave specific backing to the Governors' demand for quick action. Bypassing the Budget Bureau—which ordinarily must approve new money requests—Pace asked the committee in a letter to vote $10 million for projects in Kansas and nearly $7 million for strengthening levees on the Mississippi, in the area buffeted by the recent flood. He asked also for $15 million to be put into the flood control emergency funds. His recommendations were based on Corps of Engineers advice.

What price damages?



CRIPPLED KANSAS CITYS had their industrial areas deep in waters of the rampaging Kaw (Kansas) River when the flood crest hit them last month. While high water recedes, loss estimates continue to climb. One on-the-spot guess puts Kansas City, Kan., damage at $300 million; Kansas City, Mo., even higher. Whatever the dollar total, photos evidence how hard industrial areas both sides of stateline were hit. Private homes and small businesses took an estimated $35,000,000 beating in Amourdale District alone. (Corps of Engineers Photos.)



DOUBLE TROUBLE—A sewer blowup in Kansas City, Kan., (left photo) helped the Missouri River get through the levee to flood portions of industrially vital Fairfax district. Kaw River (right photo) takes shortcut across bi-state Central Industrial District.

Flood damage estimate increases . . .

(Continued from page 25)
damage to property resulting from direct action of the flood waters. Both types of costs are compiled by field surveys and are adjusted to eliminate duplications.

On direct losses, the Engineers appraise the cost at current prices of restoring or replacing the damaged property. For crop damage, the loss is the market value minus any costs not yet incurred, such as harvesting. When replanting is possible, the loss is the difference in market value of the two crops (the lost crop and its successor) plus the added costs of replanting.

On the second type of losses, the Corps of Engineers identifies and evaluates the indirect loss to all individuals and establishments affected by the flood, whether in or out of the flooded area. The basic principle is to determine the non-recoverable net loss for the entire nation, taken as a whole.

Most important of the indirect losses is that resulting from interruption of business and commerce. Here, the loss is figured as the value of goods or services that would have been produced but which are permanently lost as a result of interruption caused by the flood. This loss includes such things as wages lost and the value of electric power and other utilities that would have been used. From wage losses the engineers subtract the value of employment caused by the flood, such as rehabilitation work.

Other costs also included: Evacuation, reoccupation, temporary quarters, emergency flood protection work, relief and care of flood victims, emergency roads and utilities, added cost of doing business, and clean-up.

• **Bigger than ever**—For the Kaw Basin, these accounting methods showed flood losses much smaller for earlier years than the direct-damage estimate for the July flood, principally because the latest deluge far exceeded any of its predecessors in devastation of valuable property.

Other huge losses, not included in the Army Engineer estimate, also resulted from the July flood and the heavy rains that produced it. Department of Agriculture puts a tentative estimate of $2 billion on the value of topsoil washed away.

The Weather Bureau bases its estimates on factors similar to those used by the Army Engineers. Two major differences are that the Weather Bureau relies more extensively on mail questionnaires and restricts its appraisal pretty generally to the area directly damaged by the flood waters. The Bureau gets its information largely from responsible officials—such as county agricultural agents and state highway departments. Its estimates generally are lower than those of the Army Engineers.

• **MVA gets respiration**—One effect of the flood: It has breathed new life into proponents of a Missouri Valley Authority. Back at work in the basin trying to drum up support, they failed to come forward and speak their piece at the open meeting in Kansas City. They probably figured the atmosphere was unfavorable; and they were right.

Political leaders in the basin have no use for an MVA. But the drowned-out farmers and displaced workers in the Kaw Basin have no strong feelings against it. They just want protection against another disaster.

Their sentiment runs something like this: The important factor involved in any such plan is its usefulness in preventing a recurrence of the floods such as we have just undergone—other considerations are secondary.

Sen. James E. Murray of Montana and a dozen other senators have sponsored re-introduction of hisMVA bill. And in the House, Rep. John Rankin of Mississippi has a bill that would set a new peak for government omnipotence; his MVA could buy, sell, build, manage and control practically every utility that serves the people of the basin.

None of the MVA bills is regarded as having a change in Congress. President Truman has promised to express an opinion of Murray's, but after explaining the Pick-Sloan plan to the President during his inspection of the flood area, General Pick apparently feels he has Truman sold on the Army-Reclamation program for the basin.

Prices are up

The Weather Bureau has estimates of flood losses in U. S. river systems over the years. Its cumulative figures for the years 1924-48 show some sizable dollar totals; $767 million for the Ohio, $300 million for the North Atlantic basin, $446 million for the Missouri, $195 million for the lower Mississippi. Altogether the U. S. suffered $2¾ billion worth of flood losses in those 25 years.

But now we're told the recent Kaw Basin Flood alone caused near $1 billion worth of damage.

Granby Pumping Plant goes into operation

Dedication of the Granby Pumping Plant near Granby, Colo. (ENR Sept. 16, 1948, p. 80), recently marked the first regular operation of the third largest pumping plant built by the Bureau of Reclamation.

Exceeded in size only by the Grand Coulee Pumping Plant on the Columbia River and the Tracy Pumping Plant of the Central Valley Project in California, the Granby unit is a key feature of the Colorado-Big Thompson project (ENR Dec. 11, 1947, p. 96).

The $8-million plant lifts water from Granby Reservoir, on the west side of the Continental Divide, to a level where it will flow by gravity to the basin of the South Platte River on the eastern side of the Divide.

Three turbine-type pumps, each powered by a 5,000-hp motor using project-generated electric power, raise the water from Granby Reservoir to the Granby Pump Canal, a maximum lift of 186 ft. The combined capacity of the pumps at maximum load will lift about 500,000 gal of water per min.

After leaving the pumping plant and canal, the water passes through the 13.1-mile Alva B. Adams Tunnel under the Continental Divide. From the tunnel outlet, water enters the system of siphons, tunnels and conduits which lead it through five power plants on the eastern slope of the Rocky Mountains.

The three intake tubes to the pumps from Granby Reservoir are of reinforced concrete, 7.25 ft in dia and 526 ft long. The pumps discharge into three 87-in concrete-encased steel pipes which converge into a covered concrete conduit 11 ft in dia and 3,220 ft long—which leads up the hill to the pump canal.

TVA steam plant produces power from first generator

Electric power has begun flowing from the first unit of the Tennessee Valley Authority's $98-million steam plant at New Johnsonville, Tenn. (ENR Aug. 10, 1950, p. 40).

The plant, under construction for almost two years, is located on the shore of Kentucky Lake on the Tennessee River some 75 miles west of Nashville. Construction is about two months ahead of schedule; it was estimated last year that first power would begin to move next October 1.

When completed, the installation will have six generating units with a capacity of 750,000 kw and will be one of the largest steam-electric plants.

Central Valley begins big operations; more water released, pumping starts

Bureau of Reclamation's California project far from complete but initial construction brings irrigation, power, salinity control

Firm operation of the Tracy pumping plant and the Delta-Mendota canal this week-end (Aug. 4) will mark substantial completion of the initial features of California's Central Valley project after a 14-year construction period.

The Bureau of Reclamation project (ENR Mar. 20, 1947) has cost $400 million to date and is termed the most comprehensive water use program ever undertaken. It involves storage of water in the northern part of the Central Valley (including both Sacramento and San Joaquin valleys) that has two-thirds of the rainfall and one-third of the area.

This water is released to provide water for transfer to the southern part that has two-thirds of the area and one-third of the rainfall. In accomplishing this primary objective other substantial benefits are developed, including power generation, repelling salt water intrusion and flood control.

• **A going concern**—Actually all the initial features of the project have been in operation—some since 1940. The Tracy plant has been operated by the contractor in testing so the 4,600-cfs Delta-Mendota canal has carried water for its full length.

Here's how the irrigation features of the project operate: water is stored by Shasta Dam (world's second highest (602 ft) and second largest (8,710,000 cu yd) concrete dam. As needed downstream, water is released through the 375,000-kw Shasta powerhouse and the downstream reregulating Keswick Dam and powerhouse (75,000 kw).

On the southern side of the delta, some of the water is picked up by the Tracy pumping plant with major quantities flowing out toward the ocean to repel salt water intrusion. To make sure fresh water gets through the meandering delta channels, a mile-long Delta cross channel has been dredged and gates for control have been installed at the northern end.

• **The big canals**—In the delta region, the Contra Costa canal (in operation since 1940) picks up water for municipal, industrial and irrigation use on the south shore of Suisun Bay.

The Delta-Mendota canal takes fresh water some 120 miles south to the existing Mendota pool on the San Joaquin River, where it is released to satisfy existing downstream water rights. Meanwhile, water stored by Friant Dam upstream on the San Joaquin River can be diverted south through the Friant-Kern canal. Before operation of the Delta-Mendota canal, water had to be released at Friant to satisfy the existing downstream rights.

The two canals from Friant Dam, Madera and Friant-Kern, have been in operation for 7 and 2 years, respectively, supplying excess water to irrigation districts under interim contracts.

• **For the land**—Most of the project's irrigation benefits will be accomplished by the 4,000-cfs, 160-mile-long Friant-Kern canal. This will serve some 700,000 acres of rich San Joaquin Valley farm land, providing for the most part additional water for land that has been under irrigation for decades by pumping.

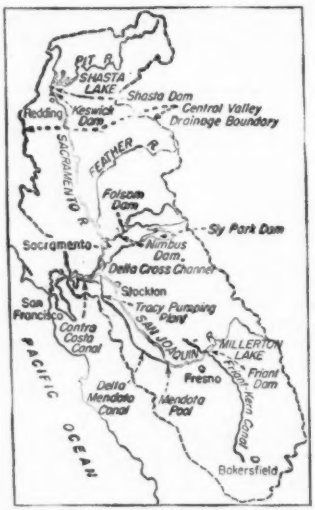
Still only a small percentage of Friant-Kern water can be put to use this year. That's because the distribution systems that will supplement the largely individual pumping systems are far from complete. Under contract with irrigation districts, the Bureau of Reclamation is designing and building distribution systems. None of these are complete and only two are delivering water.

Besides that, water contracts have not been negotiated with all of the districts to be served.

• **More work planned**—The initial features of the project were developed by state engineers in the 1920's and promulgated as the "state water plan" in 1931. During depression years, California was unable to finance construction. It was then that federal authorities in seeking for pump-priming public works construction took over. Even then legal involvements delayed start of construction until 1937.

Both state and federal agencies are working on plans to further develop water resources in this area. The Bureau of Reclamation has plans to utilize beneficially every drop of water not yet harnessed. But chances are that only a small portion will be authorized for USBR construction since the state also has plans such as the Feather River project (ENR June 7, p. 25) that would, in addition to developing more water and power for Central Valley use, transfer water to southern California.

Also involved are the Army Engineers who now are building Isabella, Pine Flat and Folsom dams in the Central Valley area. All of these are predominately for flood control, but each has reclamation features that can be developed. Only the latter (Folsom), however, has been authorized by Congress as an additional feature of the Central Valley project. Here the USBR has started work on power and irrigation features even though the contract for the main portion of the dam has not been let.



IMPROVING ON NATURE—Substantial operation of the 14-year-old Central Valley Project—extending for 500 miles from Shasta Dam on the headwaters of the Sacramento River in the north to Friant-Kern Canal serving the region around Bakersfield in the south—becomes a reality this week.

C. H. Purcell resigns as Calif. public works head

Charles H. Purcell, California Director of Public Works since 1943, resigned that position July 31, because of poor health. Purcell, 68, has entered a hospital. No successor has as yet been named by Gov. Earl Warren.

Purcell is best known as chief engineer of the San Francisco-Oakland Bay Bridge. He came to California as State Highway Engineer in 1928 after service with the Bureau of Public Roads and the Oregon Highway Commission. He attended Stanford and Nebraska universities. He was chairman of the California Toll Bridge Authority, the State Highway Commission and the State Water Authority. He also served on the State Public Works Board, the State Conservation Commission, and other state agencies.

Mr. Purcell is an honorary member of ASCE.

Kansas City, Mo., just missed a water famine

J. Roland Carr
Associate Editor

ONLY THOSE CLOSELY CONNECTED with the Kansas City (Mo.) waterworks system realized by what a narrow margin the city escaped a total collapse of its water distribution system during the recent flood.

Although one of its two big pumping plants was inundated, cutting the city's water supply nearly in half, the gravest danger was from a near failure of the intake and low-lift pumping system at the water treatment plant on the north bank of the Missouri.

This threatened failure was of a structural rather than an operative nature—excessive pressures from the high water surrounding the intake and low-lift pumping structures cracked their walls nearly to the point of collapse. Even then the low-lift pumping station withstood more than was believed possible.

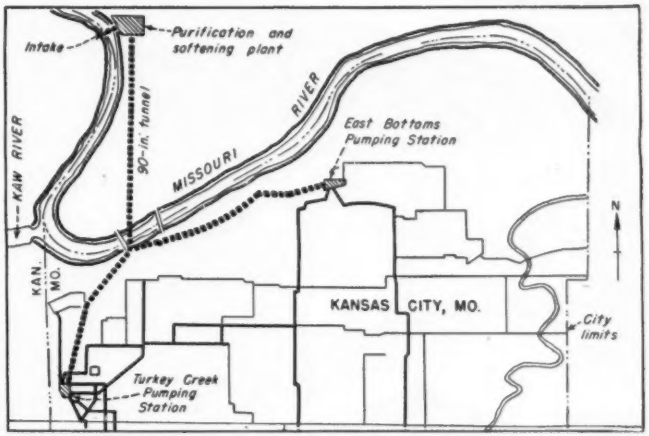
According to engineering calculations it should have failed when the flood stage reached 27 ft, but it kept on operating under 5 ft more water.

• Intake works endangered—This danger to the intake works was known to exist; having been pointed out in a joint survey completed July 1 by Burns & McDonnell, and Black & Veatch, consulting engineers of Kansas City, Mo. The survey recommended the construction of a new intake and low-lift pumping station, designed to withstand a river level 6½ ft above the recent flood.

• One valve caused the trouble—Inability to close one valve caused most of the water shortage in Kansas City, Mo. The city's 120-mgd water treatment plant is located on the left bank of the Missouri just north of North Kansas City's city limits and about 4 miles north of the business district of Kansas City. Normally, it serves nearly 500,000 people in Kansas City, Mo., proper and an additional 150,000 in outlying districts.

A secondary pumping station at the treatment plant delivers water from the filtered water reservoir through a 90-in. tunnel to the city's two main pumping stations—Turkey Creek located near 25th St. and the Missouri-Kansas Line; and the East Bottoms station located south of the Missouri River in the northeast part of the city (see map).

The East Bottoms station was not endangered by the flood; being protected by the Corps of Engineers' new flood protection levees along that stretch of the river.



WITH TURKEY CREEK STATION INUNDATED, the East Bottoms station was the sole source of supply for Kansas City, Mo. It furnished 45 mgd during the height of the flood, but could have pumped an additional 35 mgd if that amount hadn't been lost through the inability to close a valve at junction with Turkey Creek tunnel.

A 90-in. tunnel, built in solid rock, passes under the Missouri about 300 ft below the bed of the river. Shortly after passing under the river it forms a junction with two large tunnels—one serving Turkey Creek pumping station, the other serving East Bottoms station.

It was at this junction that the trouble occurred. When Turkey Creek station became inundated, one of two big control valves at the junction was closed before the water got too deep. But swift water prevented sending a diver down to shut the other one.

• Lost 35 mgd—As a result it was possible to pump only 45 mgd through the East Bottoms station while Turkey Creek station was inundated, although the secondary station at the treatment plant was pumping over 75 mgd. Apparently about 35 mgd was bypassing the junction at the end of the 90-in. line and was being wasted into the flood waters surrounding the Turkey Creek station.

Ordinarily Turkey Creek station, with an installed pump capacity of 135 mgd, handles about two-thirds of the total demand on the city's distribution system which averages 62 mgd with a maximum of 87 mgd.

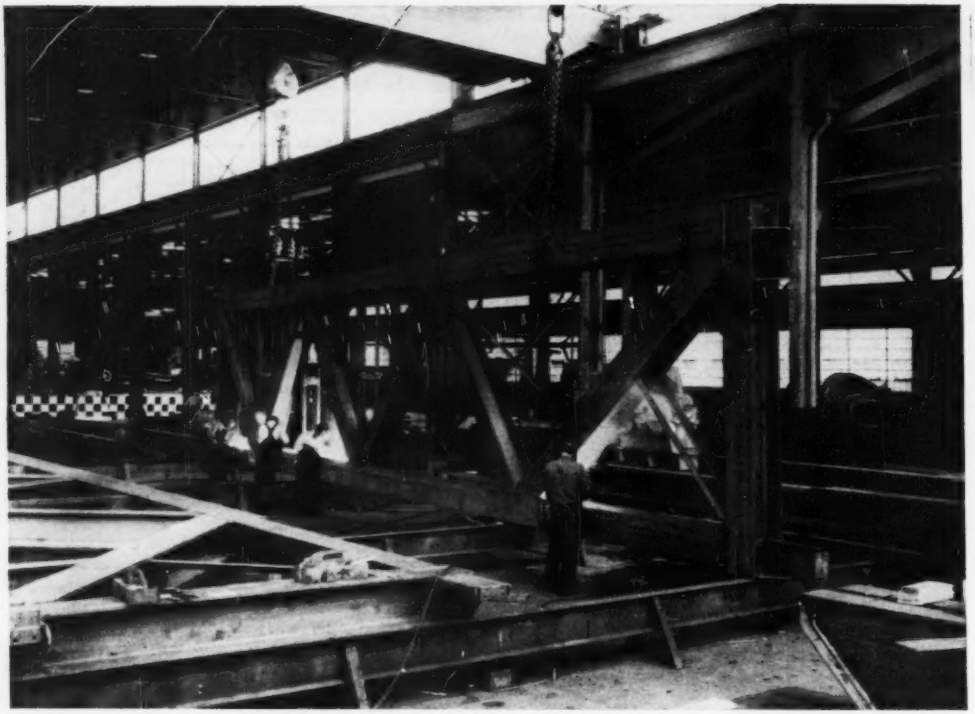
The East Bottoms station with its two 24-mgd and one 12-mgd centrifugal pumps could have pumped 60 mgd had it been able to receive that amount from the treatment plant.

The Turkey Creek pumping station became inundated and went out of commission about 10 a.m. July 12. At the height of the flood, water stood 7½ ft deep over the station's engine room floor.

• Four-day battle—It was a nip-and-tuck battle for four days to furnish water for minimum domestic and fire-fighting needs. During this period all air-conditioning was shut off throughout the city, commercial usage of water was prohibited and even the bars were closed.

By the evening of July 15 the greatest danger of a water famine had passed. As soon as the water receded the job of mopping up the Turkey Creek station, disassembling, cleaning and reassembling turbines was begun on a 24-hr basis. The first pump, of 15-mgd capacity, was back in operation July 18 and by the end of that week three 20-mgd pumps were expected to be operating.

Melvin P. Hatcher, director, Kansas City, Mo. water department, took personal charge and directed the fight to keep the water works system in operation.



STORY-HIGH TRUSS—one of three for Mt. Sinai Hospital, New York City—was shop assembled by butt welding H-beams.

Welding trims steel from heavy trusses

La Motte Grover
Welding Engineer
Air Reduction

Gilbert D. Fish
Consulting Engineer
New York, N. Y.

CHANGING from riveting to welding reduced steel tonnage about 30% for three heavy trusses in new additions to Mt. Sinai Hospital, New York City. This large saving of material was made possible by unusual loading conditions.

The trusses are included in the largest contract for all-welded buildings ever awarded in New York City (ENR March 2, 1950, p 28). About 2,700 tons of structural steel are involved.

Under this contract, three buildings, covering almost a whole city block between Fifth and Madison Aves. at 100th St., are being erected at a cost of $7,000,000—a 150-bed Maternity Annex, nine stories high; Main Laboratory, eight stories high; and Berg Laboratory, three stories high.

• **Short span, heavy loads**—The three trusses are in the Main Laboratory building, encased in walls. Almost identical, they are one story high and span 54 ft over a basement delivery area.

They support two floors directly. In addition, at midspan, each truss supports an exterior column, which in turn carries seven upper floors. This extra load is due to an offset in the building creating an open area between existing and new structures.

In consequence of the comparatively short span of the trusses and the heavy loads to be carried—a total of nine floors—very high shear loads have to be carried by the diagonals. Had a riveted design been used, a complicated multi-plane system would have been necessary to accommodate the large number of rivets required at the joints. This would have resulted in higher fabricating costs and more steel than for the welded design.

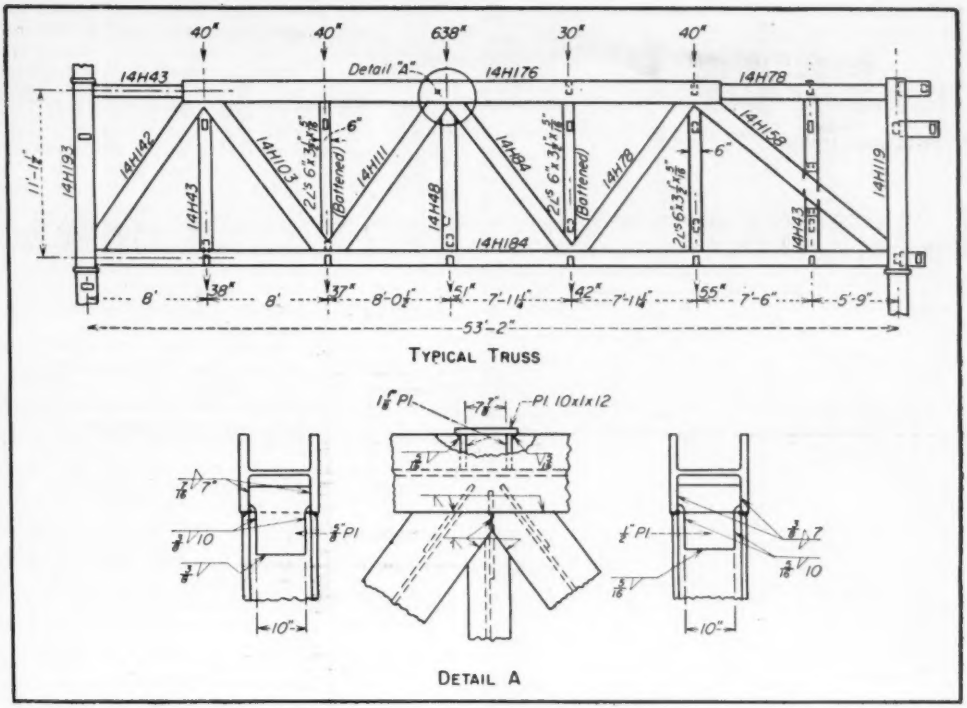
Each welded truss requires 15.7 tons of steel, compared with 22.3 tons for a riveted design. For the welded construction, the weight of connection material and other details included in this tonnage is only 3.6% of the weight of the truss, compared with 32.4% for the riveted design.

Welded plate girders would have been considered had it not been for the necessity of providing doorways.

• **Joints butt welded**—Trusses consist of 14-in. wide-flange sections joined by butt welding the flanges. Shop assembled, these sections were arranged with flanges in vertical planes to facilitate making the connections.

Connection plates were used at joints to develop webs of diagonals and of one of the heavier verticals. These plates were fillet welded at one end to the web of the diagonal or vertical and at the other end to both flanges of the chord. Butt welding would have necessitated tighter fitting and would have been more difficult.

The butt welded flange joints were



JOINTS of the heavy trusses were reinforced with connection plates to develop the webs of diagonals. These plates were fillet welded to facilitate fitting. Riveting would have necessitated a complicated multi-plane system.

made feasible by changes in the New York City building code. Original provisions for welding in the code were adopted about 13 years ago. At that time, research programs and greatly accelerated technological progress in this field were just getting under way. Butt welds were not accorded the full allowable base-metal stresses then. Therefore, to develop the full allowable static strength of the base metal, splices and connections had to be fillet welded.

When research and experience established the general superiority of butt welds several years ago, the American Welding Society and the American Institute of Steel Construction changed their specifications to permit the full allowable base-metal stresses for butt welds. Now, the New York City code also approves the higher stresses. This makes possible the design of welded trusses and girders of greatly improved efficiency for use in that area.

• **Fabrication**—There was not enough duplication of connections in the Mt. Sinai Hospital trusses to warrant elaborate jigs for fabrication. Members were heavy enough to remain in the correct relative positions during fitting and tack welding without the need for constructing special locating and clamping devices.

After the ends of the members had been beveled with a portable oxy-acetylene cutting machine to prepare them for welding, the members were laid on substantial, carefully leveled skids for fitting and welding.

Some extra care was required in fitting truss joints because of rolling-mill dimensional tolerances, including slight rotations of the flanges of the wide-flange sections. Nevertheless, no serious difficulties were encountered in getting a proper fit.

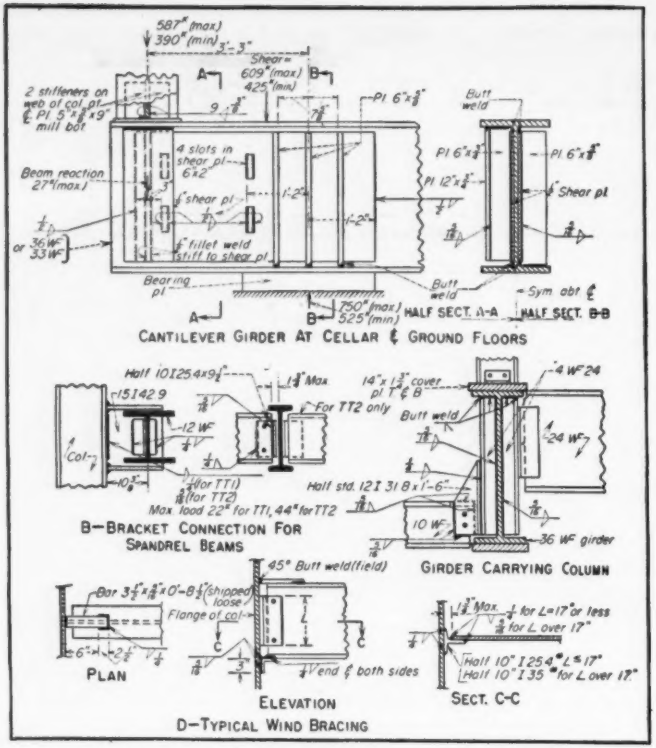
Most of the welding was done in the flat position with the trusses lying on one side or the other. When a truss was being turned over, a crane held it in a vertical position long enough for a few welds to be made on the web connection plates. In this way, vertical welding was avoided.

Butt welds are of the single-bevel type, welded from both sides to insure complete penetration. Special care was taken to provide sound weld metal at the ends of these welds, where the arc was started or terminated. Electrodes were the E6012 type, which is most commonly used for structural fabrication.

• **Simple-beam connections**—Other parts of the structural frames of the hospital additions were designed as simple frameworks; that is to say that beams were assumed to be simply supported.

Wind-bracing connections, in general, are of the type in which a top plate is connected to the column by a full-section butt weld and to the top flange of the beam by fillet welds. An unwelded portion at midlength of the top plate provides adequate material for a small amount of self-limiting plastic stretch. (This type of connection, first described in "Arc Welded Steel Frame Structures," by G. D. Fish, McGraw-Hill Book Co., New York 18, N. Y., 1933, is now being widely used.)

The design involves the assumption that if any combination of gravity and wind loading produces a stress in the connection exceeding the yield point, the stress would be relieved by plastic stretch in the unwelded portion of the top plate. It is further assumed that after such a top plate has once been subjected to the maximum



NOTEWORTHY DETAILS of welded connections in the structural frame of the three hospital additions. Use of butt welding led to more economical design.

tension induced by combined loadings, subsequent behavior will be of an elastic nature.

Column base and splice details, beam-end connections and built-up girders, in general, follow common practice. However, a number of special details are noteworthy.

• **Unusual details**—At the cellar floor and the ground floor of the Maternity Annex, reactions of some columns adjacent to existing building walls had to be transferred by cantilever girders to bearing plates set in 3 ft 3 in. from the column centerline. Wide-flange beams were used as the cantilevers, but shear plates had to be added to reinforce the webs. Also, bearing stiffeners were placed under the columns and over the bearing plates. The stiffeners were butt welded to the girder flanges, eliminating milling of the bearing ends, which would have been necessary if fillet welds were used.

Another detail of interest is the one developed for some girders that carry column loads. Load-bearing stiffeners under the columns also support beams that frame in at those locations.

• **Designers and builders**—Plans for this project were prepared by Kahn & Jacobs, architects, and Severud-Elstad-Krueger, structural engineers, with York & Sawyer as consulting architects. Gilbert D. Fish, consulting engineer, designed the welded joints, connections, trusses and built-up members.

Construction work was under the direction of Alfred Rheinstein, chairman of the Mt. Sinai Hospital building committee. Thompson-Starrett Co. was the general contractor. Structural steel was fabricated under a separate contract by The Ingalls Iron Works Co., of Birmingham, Ala., at its Verona, Pa., plant. Steel was erected by the Karl Koch Erecting Co., and field welding was done by Craftsmen Welders, Inc.

British engineers troubled by union affiliation rule

British engineers are greatly perturbed by a requirement set up by the Borough Council of Edmonton when the council was seeking a borough engineer and surveyor that "the person appointed shall, during the term of his employment by the Council, be and continue to be a member of a trade union affiliated to, or specified by the Trades Union Congress, or eligible for affiliation to the TUC." This is the outcome of the repeal back in 1946 of the Trades Disputes and Trade Unions Act of 1927, which made it unlawful for any "public authority to make it a condition of employment or continuance in employment of any person that he shall be or shall not be a member of a trade union."

This new requirement by the Edmonton Borough Council came a short time after the National Union of Teachers had compelled the Durham County Council to withdraw a similar rule. The teachers' union maintained that it was an attempt to interfere with the professional independence and freedom of teachers.

Commenting upon this, the editor of THE ENGINEER, London, states: "Teachers are highly organized to resist encroachments upon their liberties. But professional engineers are not. For the great and very influential engineering institutions to which so many engineers belong are learned societies whose job it is to encourage education and advance the science and art of engineering, and not bodies which can concern themselves with the salaries and conditions of service of their members.

"The body that brought the matter to our notice, and about whose activities in relation to it we published an announcement last week, was the Engineers' Guild. Unfortunately, that body, founded shortly before the war to watch over the interests of its members and of professional engineers in general, is still, upon a count of its members, relatively small and lacking in power."

THE ENGINEER goes on to point out that copies of the protest by the Engineers' Guild have been sent to the Minister of Transport and the Minister of Local Government and Planning; also that the guild, in conjunction with the National Association of Local Government Officers, has arranged for a question relating to the action of the Durham County Council to be brought up in the House of Commons.

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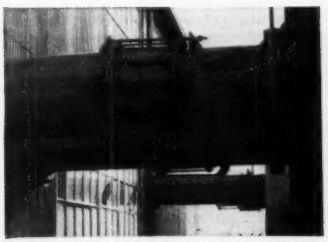

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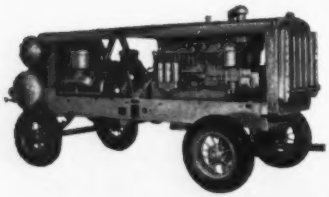

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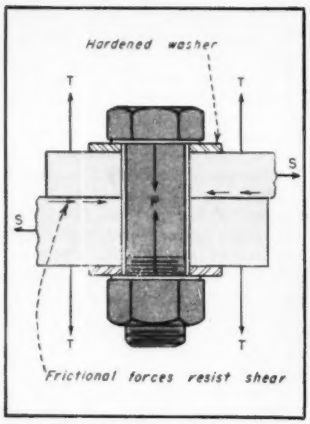

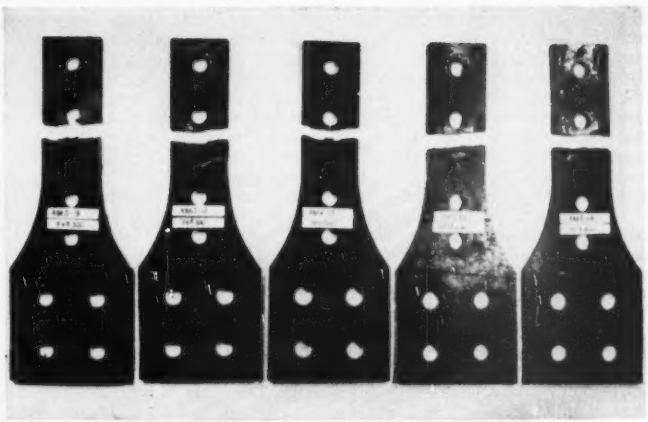

CONNECTION made with high-strength bolt resists shear through friction on contact surfaces. Plates do not bear on bolt. As illustrated at right, such joints fail in fatigue outside the so-called "net section."

Bolted joints found better under fatigue

T. R. Higgins
Director of Engineering
American Institute of Steel Construction
New York, N. Y.

LABORATORY TESTS and field experience have demonstrated the superiority and economy of structural steel connections made with high-tensile steel bolts. In comparison with ordinary riveted and bolted connections, these bolts are particularly advantageous for structures subjected to widely fluctuating dynamic loading.

Placed in holes of larger diameter than that of the bolt shanks, the bolts clamp the components of a joint together under high pressure. This enables the joint to resist shear through friction at the contact surfaces.

Design and fabrication of such connections is covered in a specification, "Assembly of Structural Joints Using High-Tensile Steel Bolts," which was adopted early this year by the Research Council on Riveted and Bolted Structural Joints.

• **Field experience**—Test installations of high-strength bolts under severe conditions have been under observation for more than three years by the research staff of the Association of American Railways. One installation is in the riveted ore bridge of the Pennsylvania Dock Co. at Ashtabula, Ohio. Under the dynamic loading to which this structure is subjected, rivets often work loose, creating an expensive maintenance problem. To alleviate this nuisance, high-strength bolts were substituted for rivets in some trolley-stringer and bracing connections. These joints now are entering their fourth season of bridge operation without need for maintenance.

Similar behavior was observed for this type of connection in other ore bridges and in railway bridges.

High-strength bolts also may be used in structures in which fatigue resistance is unimportant, when the bolts show greater economy. An example is a 21-story building now being erected for the Mayo Clinic, Rochester, Minn., for which field riveting was ruled out because of the noise. After a comparative cost study, the contractor elected to use high-strength bolts instead of field welding.

• **Bolts may be cheaper**—While the cost of these bolts is much more than that of corresponding plain, undriven rivets, savings in the cost of installation often more than make up the difference. This is particularly true where a relatively small number of rivets or bolts, perhaps quite widely scattered throughout a structure, must be installed at some remote site where costs incident to assembly and use of riveting equipment would mount rapidly. However, even under conditions favorable to riveting, high-strength bolts may be competitive.

One of the first buildings to be assembled with such bolts is a 14-story hospital at the University of Illinois. The bolts were late in arriving. Rather than hold up the job, the contractor used standard erection bolts, which he later had to replace with high-strength bolts. The final cost was $6 to $7 per ton more than if the structure had been riveted, including the higher cost of the bolts. If the bolts had been available as erection bolts, however, there would have been a net saving in time.

There are numerous other cases of friction connections being selected after cost comparison with other types. For one 8-story building, such action showed a net saving of 11% for the erection, based largely on the following factors:

1. Elimination of temporary erection bolts.
2. Elimination of transportation of riveting equipment.
3. Two-man crews to bolt up after erection.
4. Normal production per crew of 400 bolts per day.

The bolts were installed with air impact wrenches and were spot checked with a torque wrench. Even when impact wrenches are used, the noise is much less than that due to rivet guns; hand-torquing, of course, is noiseless.

• **Tests favor bolts**—Nearly a quarter of a million dollars was spent on research on riveted and bolted joints, the first tangible result being high-tensile bolt connections. This investigation of friction joints was carried out as Project IV of the Research Council for Riveted and Bolted Structural Joints. Like the Welding Research Council, this four-year old organization, upon the recommendation of

the American Society of Civil Engineers, is sponsored by and functions under the Engineering Foundation. Other contributing sponsors include the Association of American Railways, American Institute of Steel Construction, American Iron and Steel Institute, Illinois Division of Highways, Industrial Fasteners Institute and Public Roads Administration.

In addition to the financial support of these groups, substantial contributions of intrinsic value have been made by Purdue University, Northwestern University, and the Universities of Illinois and Washington—in whose laboratories the experimental programs are being carried out.

A notable feature of Project IV, distinguishing the council's work from that of earlier investigators, is the extensive use of fatigue testing. Prior to the formation of the council, exploratory work performed on special machines had already indicated that fatigue testing is often the most effective approach for evaluating structural connections of different design. The testing machines, which were developed during the last decade, are large enough to perform fatigue tests on full-scale joints containing more than four common-size rivets or bolts.

Tests made by the machines show that if joints of different geometry but with nearly the same behavior under static loading are subjected to many cycles of loading, the endurance limit of some may be larger than that of others. This is of great significance in the design of structures to sustain widely fluctuating loading. Some parts of most bridges and all parts of some industrial equipment come within this category.

Tests also show that high-strength bolts, substituted for an equal number of rivets of the same diameter, exhibit superior behavior under fatigue loading:

Fastener	Fatigue strength—psi 2,000,000 c. full reversal
Cold-driven rivets	14,700
Hot-driven rivets	15,820
High-strength bolts	17,200

These fatigue strengths are typical; actually, the difference in stress at failure under a specified number of cycles may be small or large, depending on the design of the joint.

These test results led to field installations to verify the conclusion that high-strength bolts require less maintenance than rivets in structures subject to cyclic loading. As mentioned previously, field experience favored the bolts. The next step was preparation of a specification.

• **No slip in joints**—Salient points covered in the specification adopted by the council last January are these:

1. High-strength bolts may be substituted for an equal number of American Society for Testing Materials A141 rivets of the same nominal diameter. Though shear is actually resisted through friction at contact surfaces, the bolts are allowed the same "shear" stress as the rivets.

2. Construction should conform, in general, to existing codes for riveted structures.

3. When the bolts are used, holes may have the customary $\frac{1}{16}$-in. clearance associated with ordinary riveted work and with unfinished bolts.

Tests show that any slip that occurs is far too small to bring the sides of the holes into bearing against the bolts. Obviously, this favors the bolts by eliminating bending stresses from them. For all practical purposes, they sustain only a static tension stress, producing no fatigue.

Appreciable slip will not take place in joints having contact surfaces with ordinary mill scale and clamped with high-strength bolts torqued nearly to the proof load, unless the applied loading on the joint is at least a third greater than the design loading. For the plates to bear against the bolts, applied loading must be at least twice the design loading.

• **Bolt characteristics**—The specification requires that bolts meet the requirements of ASTM Tentative Specification for Quenched and Tempered Steel Bolts, A325 (yield point 74,000 to 90,000 psi and tensile strength 105,000 to 125,000 psi, depending on bolt diameter). They must also conform to American Standards Association's standard for Regular Semi-finished, Hexagonal, Head Bolts, ASA B18.2, with respect to threads and other dimensions. However, the radius of the fillet under the bolt head must be at least $\frac{1}{32}$ in. for bolts larger than $\frac{3}{4}$-in. dia and at least $\frac{1}{16}$ in. for bolts larger than 1-in. dia.

At least one carburized or quenched and tempered washer must be installed under each nut and bolt head.

• **High clamping force**—All nuts must be tightened to reproduce a bolt tension of not less than 90% of the elastic proof load of the bolt. It is interesting to note that the clamping force recommended is about three times that which would be required to completely compress ordinary spring washers. It is little wonder, then, that in no case to date, either in the laboratory with as many as 8,000,000 cycles of loading, or in closely watched field installations, has one single nut shown the slightest tendency to back off. Yet, no particular measures have been taken to restrain the nuts.

The specification further requires that a certain proportion of the bolts be checked for tension by a procedure of loosening and retightening under controlled conditions. The exact number of bolts is to be determined in advance by the engineer in charge, but for the present, between 5 and 10% is the recommended proportion.

Joints are to be spot checked regardless of the method of applying the torque to the bolts. According to one school of thought, equipment and techniques should be developed that would record or control the amount of torque. According to another group, calibrated devices would be made available at the construction site so that each iron worker can practice until he acquires the feel for the predetermined torque. With new work employing high-strength bolts now pending, there should be ample opportunity in the next few months to see which is the more practical approach to this problem, which intimately involves the human equation.

In the meantime, research is progressing toward improving the specification and increasing the economy of the friction joint.

Airborne profile recorder allows quick strip survey

Ground-to-airplane radar has been coupled with a graphic device to provide profile data on ground over which a plane flies.

Together, the radar and recorder are called the Airborne Profile Recorder, described in PHOTOGRAMMETRIC ENGINEERING, December, 1950, by B. I. McCaffrey, project engineer, The Photographic Survey Corp. Ltd., Toronto.

Height information is obtained by a narrow-beam microwave radar altimeter. Measurements are recorded over a range of 2,500 ft on a 5-in. paper strip, at elevations up to 30,000 ft.

Beam width of the radar instrument is $1\frac{1}{2}$ degrees. The ground "seen" is a circle having a diameter of 28 ft for every 1,000 ft of terrain clearance. On uneven ground, the elevation of the highest point is recorded.

In heavily wooded areas, the heights of growth must be ascertained by inspection of photography since microwave radiations are reflected by the tree tops. Correlation between true flight paths and the recorded drawing is achieved by vertical photography.

An auxiliary unit called a Datum Stabilizer has been developed to correct for deviations from level flight.

Accuracies of plus or minus 20 feet were attained by 1948. By selecting lake and other water surfaces or flat ground precision of plus or minus 10 feet appears possible.

The Rittenhouse-Claridge

Twenty-five story, 482-family Rittenhouse-Claridge apartment building, Philadelphia. *Owners:* M. H. McCloskey and Kevy K. Kaiserman, Philadelphia; *Builders:* McCloskey & Co., Philadelphia; *Architects:* J. Raymond Knopf, Samuel I. Oshiver, J. Ethan Fieldstein, Philadelphia; *Structural Engineer:* Robert E. McLaughlin, Philadelphia; *Mechanical Engineer:* Leslie S. Tarleton, Philadelphia.

This imposing 25-story apartment building, rapidly nearing completion in the heart of Philadelphia, occupies a 160 ft x 160 ft tract, and faces fashionable Rittenhouse Square.

The 1500-room Rittenhouse-Claridge will be fully air conditioned, and its apartment units, ranging in size from 1½ to 7½ rooms, will accommodate 482 families. Its facilities include two terrace apartments, a restaurant, and a basement garage for 125 automobiles. A 200-ft radio tower, plus a 50-ft pylon, will grace the top of the structure. The exterior is buff Roman-style brick, with terra-cotta trim at the first-floor level. Exterior columns are set back to permit the use of continuous metal sash with casement windows.

The 3000 tons of steel in the framework of the Rittenhouse-Claridge were fabricated and erected by Bethlehem.

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BETHLEHEM STEEL

FABRICATED STEEL CONSTRUCTION

Marshalling men and methods for half billion dollar atom plant

Designs stem from five-firm team

(Last of three articles)

J. Roland Carr
Associate Editor

DESIGNERS OF THE U-235 PLANT near Paducah are playing roles equal to those of construction as outlined in the first two articles of this series (ENR July 19 p. 28 and July 26 p. 37). Theirs is the job of creating on paper what the contractor will bring into reality.

Because of a singular situation, the design phases of the Paducah project have an unusual setup. The governing factor is that only one firm in the country has had experience with gaseous diffusion process research, design, engineering, and operation. This is the Carbide and Carbon Chemicals Co., a division of Union Carbide and Carbon Corp. So the Atomic Energy Commission has called on this firm to provide the overall process design and engineering, on which the architect-engineer activities of four cooperating firms are based.

The four cooperating architect-engineering firms are: Giffels & Vallet, Detroit, process buildings; Smith, Hinchman & Brylls, Detroit, auxiliary buildings and facilities; Sargent & Lundy, Chicago, power transmission and control facilities; and Singmaster & Breyer, New York, the feedplant.

• **Carbide and Carbon's part**—The Atomic Energy Commission selected the Carbide organization not only to operate the completed plant, but to develop the basic process designs, and to be responsible for supplying the four architect-engineer firms with the data from which their assignments will take form. In addition, Carbide has the sole responsibility for procuring vast quantities of special materials that will go into the various facilities, and the procurement of all special operating equipment.

Based on its pioneer work on the gaseous diffusion process starting in 1943 and its continuous research, engineering and development since that start, Carbide is well-qualified to do this key part of the design job. From the beginning also this firm has been highly successful in operating the gaseous diffusion plants at Oak Ridge.

Data furnished the architect-engineers by Carbide include such information as flow-rates, critical temperatures and pressures, and flow-diagrams in the gaseous diffusion process. They also review and approve the preliminary and fundamental drawings, specifications and bills of materials prepared by the architect-engineers.

ARCHITECT-ENGINEER MEN IN CHARGE

Giffels and Vallet

C. J. Steigleder, project manager
R. J. Pfaendtner, resident manager
A. B. Morgan, chief field supervisor
E. M. Jones, laboratory
R. Neal, surveys

Asst. Chief Supervisors:
K. C. Danstrom, arch. and struct.
J. F. Norton, mechanical
B. D. Dirks, electrical

Smith, Hinchman & Grylls

P. J. Ketelhut, project director
F. L. Couch, resident engineer
H. J. Mahar, liaison

Chief engineers:
W. L. Bice, electrical
W. W. Aronwits, mechanical
L. A. Miller, structural
N. C. Kern, architectural
J. L. Bannon, civil

Singmaster & Breyer

Wm. H. Finkeldey, project manager

Personnel of Carbide & Carbon Chemicals Co.

G. T. Felbeck, vice president in charge of atomic energy projects
C. E. Center, gen. supt., Oak Ridge and Paducah projects
W. B. Humes, supt. of production
Sylvan Cromer, chief engineer
Paducah Superintendents:
J. P. Murray, plant supt.
R. G. Jordan, operation division
R. A. Walker, engineering division
H. R. House, electrical and instrument maintenance
E. C. Cain, industrial relations

Final approval of these items, however, rests with the Atomic Energy Commission's representatives on the job.

• **Purchasing special equipment**—Carbide's engineers, necessarily work very closely with leading process equipment manufacturers in the development and design of much of the specialized equipment. One big job is to review all final specifications to assure that they allow competitive bidding. The company then takes bids on the equipment and places orders.

Price alone is not the only criterion for placing an order. Delivery dates, conformance to specifications, and services available from the vendor all enter into the picture. Once the orders are placed, Carbide's technical field men lose no time in joining forces with the vendor to see that subcontractor components and materials are scheduled properly so that final delivery dates can be met.

• **Equipment procurement is tough**—Equipment procurement problems on a project the size of the Paducah plant, says Carbide, are extremely difficult. One of the biggest headaches is to locate vendors—in an already critical market—who have the plant capacity, or are willing to obtain such capacity, to supply the installed equipment desired. Sometimes this necessitates placing of orders on a divided basis.

Carbide's field engineering staff at Paducah isn't large; only 6 at present with an estimated 25 at the peak of construction. This relatively small number of engineers is made possible by the company's previous experience in producing U-235 by gaseous diffusion, which permits much detail work in connection with procurement inspection to be turned over to the architect-engineers.

Carbide and Carbon Chemicals Co. has already started hiring its operating forces. When the Paducah plant reaches full-scale operation—at some undisclosed date—it will take a total of 1,600 persons to staff the whole operation.

• **Giffels & Vallet's part**—Giffels & Vallet have been working with the AEC since the middle of 1950 when they started making the master plan and preliminary building designs. This

will be their third atomic plant design; the others being Oak Ridge and Hanford. Dollarwise, they will design about 85% of the structures in the project.

They also will furnish field inspection on the work, and complete laboratory and testing service for the job. This calls for a modern materials laboratory, already erected on the site, complete with a 500,000-lb compression testing machine.

Survey and inspection requirements involve such accuracy as to warrant the purchase of a $2,500 level in which all moving parts are made of invar. Invar tapes also are used.

Giffels & Vallet have been recruiting engineering personnel—particularly those experienced in similar design work—ever since they started designing their part of the project. Some measure of the enormous amount of design and drafting that is involved can be gained from the fact that 2,750 standard size tracings will be needed for their part of the design. About 50 blueprints of each tracing will be made.

At the peak of engineering operations on the project, Giffels & Vallet will have 100 field men. This field organization is headed by a resident manager. Under him are five field engineers: architectural, structural, mechanical, electrical and civil; and a chief field supervisor.

The bulk of the field organization is under the chief field supervisor. He has three assistant chief field supervisors responsible for architectural and structural work, mechanical, and electrical construction—also a survey section and the laboratory service section. Below the level of assistant chief supervisors are field supervisors who, in turn, supervise the work of the inspectors.

• **Smith, Hinchman & Grylls**—Specialized design work such as the sanitary and fire water systems, sewer system and treatment plant, the steam plant, an administration building and auxiliary buildings, is the responsibility of Smith, Hinchman & Grylls.

The auxiliary buildings include a cleaning building, technical services building, maintenance and stores building, garage and a miscellaneous storage building. Their design work also includes railroad extensions in the area, an access road, and patrol and haul roads within the area.

A field force of 60 engineers will be employed by Smith, Hinchman & Grylls at the peak of their operations. A project director is in charge, assisted by an Oak Ridge representative and an administrative assistant. There also is a liaison engineer between the director and five chief engineers handling electrical, civil, mechanical, structural and architectural design.

Reporting directly to the project director is a resident engineer in charge of field operations. Under him are two divisions; the chief field office engineer with his field engineers, architects and draftsmen; and the chief field superintendent in charge of field superintendents, survey crews and inspectors.

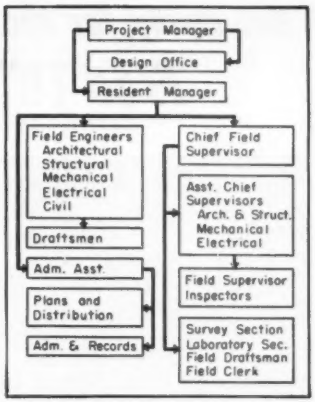
• **Singmaster & Breyer**—Complete designs of the feedplant are being prepared by Singmaster & Breyer. They will supply drawings and specifications for construction and purchase by F. H. McGraw and Co., as well as Carbide and Carbon Chemicals Co. When construction of this unit gets underway they will set up a field staff to supervise and inspect it.

Singmaster & Breyer have been connected with atomic energy projects since 1943. Their consulting, design and construction contract management work, involving various phases of uranium metallurgy and chemistry, has also extended to Hanford, and Oak Ridge.

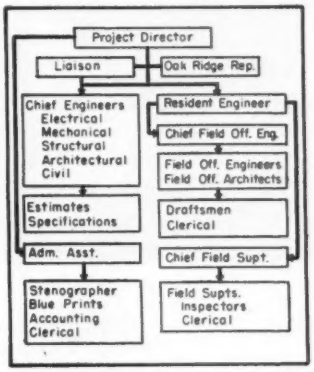
Design of the feedplant will require a peak force of about 125. The procedure entails preliminary specifications furnished by Carbide and Carbon Chemicals Co.; analysis and design by Singmaster & Breyer for application in the new unit; and final approval of designs and specifications by both Carbide and the AEC. This method insures the best and most up-to-date design for the Paducah unit. It incorporates the specific know-how of the experienced operator, with Singmaster & Breyer's metallurgical and chemical experience in the various industries.

• **Sargent & Lundy**—Designing of the transmission line terminal facilities, switchyards, switchhouses, and control buildings in the power set up is entrusted to Sargent & Lundy. This firm will also furnish field inspection on the construction and installation of these facilities.

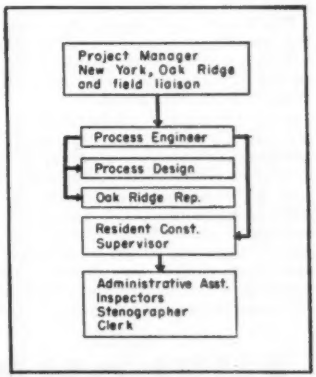
At peak production the entire plant facilities will require considerable electric power. This power will be furnished jointly by a syndicate of five private electric power companies known as Electric Energy, Inc., and the TVA. Each is building a 640,000-kw steam generating plant in the area. Their generating and distribution systems will be interconnected and with other systems in that part of the country. In this way they will provide for the full usage of the total power resources of all systems, as well as the economic interchange of periodic surplus power from the new generating stations.



GIFFELS & VALLET'S field organization on the Paducah project will be built up to a peak of 100 engineers; mostly for surveys and construction inspection.



SMITH, HINCHMAN & GRYLLS, architect-engineers on designs and field inspection of auxiliary buildings, will employ a maximum staff of 60 field engineers.



SINGMASTER & BREYER'S field organization for supervision and inspection on construction of the feedplant will be small.

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INTERNATIONAL TRUCKS

Heavy-duty engineered for the long haul

Short tunnel readies more water for Chicago's heavy summer demand

A. G. Anderson
Engineer of Water Works Construction
Department of Public Works
Chicago, Ill.

ONE OF THE SHORTEST tunneling jobs on record has just been completed at the Roseland Pumping Station on the southwest side of Chicago.

The entire job consisted of mining a 7-ft length of 10-ft finished inside diameter tunnel; enlarging about 19 ft of adjoining partially excavated tunnel; and lining the entire 26 ft of new tunnel with concrete.

Although this is a short tunnel, it is a very important one. It forms a connection between the original tunnel serving 40-year old Roseland Pumping Station, and a 10-ft branch tunnel mined and lined in 1942 as part of tunnel additions to the station. Completion means that Roseland Station is assured of a more dependable supply of water for its heavy pumpage this summer.

• **History**—When the Roseland Station was placed in operation, in 1911, it was equipped with four 25-mgd triple-expansion steam-powered piston pumps. The station got its water from Dunne Crib through a 9 ft horseshoe section tunnel extending under State St. from 73rd to 104th St., then west under 104th St. to a wet well in the station (see map).

After about 30 years of service, increased capacity became necessary and a new 10-ft Chicago-Section tunnel (curved roof, vertical sides) was completed (1942) from 73rd St. under Stewart Ave. to the station. This new tunnel terminated at a new 18½-ft dia., by 146-ft deep, screen shaft just east of the station. Two sluice-gate-controlled 8x9½-ft suction tunnels were driven in rock from the screen shaft to beneath the pump room.

• **Delayed by the war**—War conditions and inadequate finances delayed progress on the installation of new pumps. A 75-mgd turbine-driven pump was delivered in 1942, but accessory equipment was not available until later. In order to use the new tunnel, however, a 25-mgd electric-powered centrifugal pump was installed, for emergency usage, in June 1943.

• **Two centrifugals added**—The new 75-mgd pump was finally installed and readied for service in July 1944. The suction of this pump (Unit No. 1) is seal-connected to a shaft that connects to the south suction tunnel. A second 75-mgd pump was placed in service in July 1949. Its suction is seal-connected to the north suction tunnel.

Installation of the two new centrifugals required removal of the two old triple-expansion steam pumps.

Following the installation of the second 75-mgd unit, the centrifugal pumps provided most of the station's capacity. All water pumped by them was drawn through the Stewart Ave. tunnel, with the old State St. tunnel serving only the two remaining 25-mgd units.

Original plans contemplated interconnection of the Stewart Ave. and State St. tunnels. Consequently, at the time of sinking the screen shaft at the end of the Stewart Ave. tunnel a 10-ft dia branch was driven from the shaft north to within a few feet of the old tunnel under 104th St. A 10-ft vertical shaft was sunk and a 72-in. gate valve was provided in the branch tunnel 50 ft north of the screen shaft.

Removal of the 7-ft plug, enlarging the 19 ft of adjoining tunnel and lining the entire 26 ft of tunnel with concrete was completed on May 28.

The necessity for completing this interconnection between the two tunnels had been apparent for some time. Moreover, anticipated heavy pumpage requirements necessitated its being accomplished before the 1951 summer.

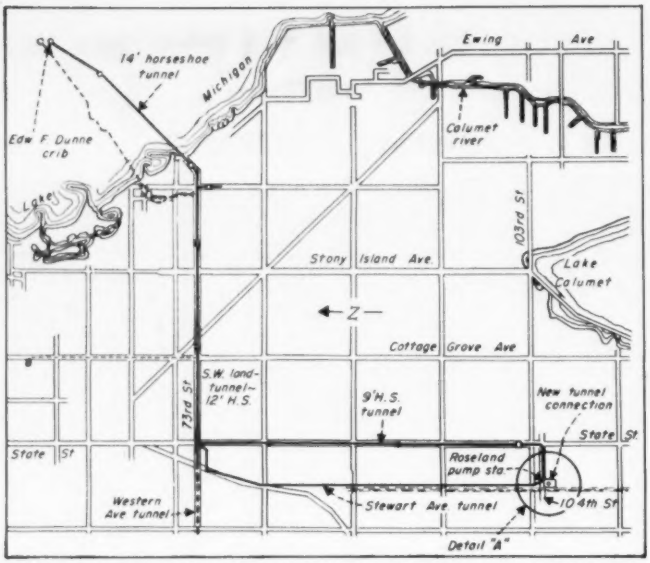
• **Dewatering was difficult**—The job of dewatering the old tunnel to permit entry was much more difficult than anticipated. The nearest sluice gate by which the south end of the tunnel could be isolated is at 79th and State St., 3¼ miles from Roseland Station.

A previous attempt had been made partially to unwater this section of tunnel but leakage through or around the sluice gate, under a 12-ft differential head of water, was 3,000 gpm.

Last fall a diver made some provision to reduce the leakage. The 79th St. shaft when built had been closed off from the tunnel by a wood-lagged, steel ring arch conforming to the diameter of the tunnel. This prevented access to the tunnel by a diver.

Entering the gate shaft, last November, a diver first removed a considerable accumulation of silt over the wood arch, using an air-lift. Then, using a hand chisel and hand saw, he

FORTY-YEAR OLD State Street tunnel is tapped with short section of new interconnecting tunnel (leading to the right) to insure adequate water for southwest Chicago.



ROSELAND PUMPING STATION is served by Dunne Crib through the old State St. tunnel built in 1911, and the Stewart Ave. tunnel, completed in 1942.

cut through the arch entirely across the tunnel on a line about 2 ft from the sluice gate.

This permitted the removal of a section of the arch, including one arch-ring; leaving a 2-ft opening through which the diver could drop into the tunnel.

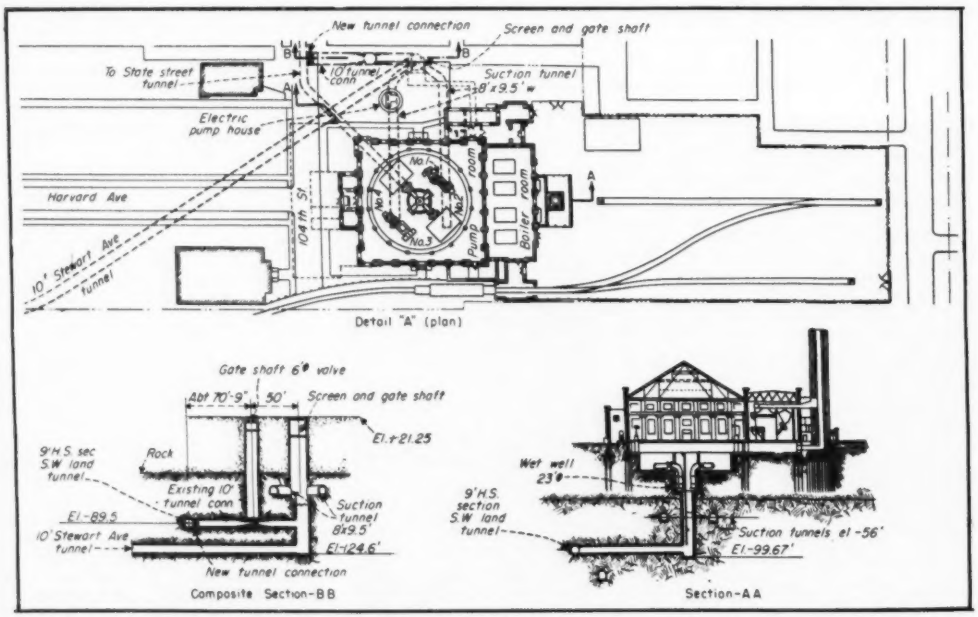
• Suction pump placed at Roseland—Nothing further was done until April of this year. At that time a deep-well, 50-hp electric pump was set in the Roseland Station's wet well, with its suction reaching the flow line of the tunnel (El.–94.5).

At maximum lift, this pump delivered 1,000 gpm.; the limit of sewer capacity at Roseland. There was a work shaft open to the tunnel at 91st and State St., with ample sewer capacity adjacent.

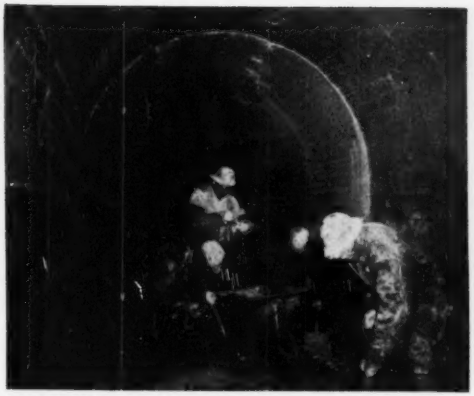
• Two suction pumps at 91st St.—Two deepwell electric pumps—a 75-hp and a 50-hp—were installed at the 91st St. shaft through openings cut in the street pavement and the reinforced concrete shaft cover. These pumps, each with a 1,000-gpm capacity, reached to El–97.5 and El–96.0, respectively. The tunnel flow-line at that point is El–99.5.

The sluice gate at the 79th St. shaft was closed on April 30, and the three deep-well pumps started. The diver was lowered into the shaft, taking along a mixture of wheat bran and powdered coal to stop all leaks past the sluice gate that he could find.

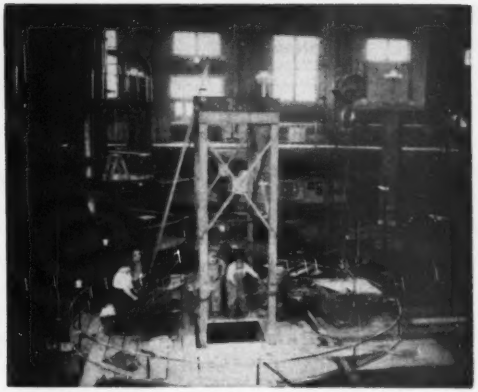
He was able to stop, as nearly as could be determined, all leaks through the gate. But numerous areas in the concrete walls of the shaft and tunnel seemed to be drawing water. Many of these areas were sealed by the diver, resulting in the tunnel being unwatered without difficulty. This was accomplished despite an estimated continuing total leakage of 1,500 to



NEWEST IMPROVEMENT at Roseland Station is a short length of 10-ft dia tunnel (Detail A) connecting the old tunnel under 104th St. to a branch tunnel—built in 1942—leading to the screen shaft at the end of Stewart Ave. tunnel.



WORKMEN CLEAN UP completed 10-ft Chicago-Section tunnel preparatory to flooding it with water from Dunne Crib, chlorinating, and pumping until samples show proper residual for domestic consumption.



PLATFORM ATOP WET WELL of Roseland Station serves as working deck for final mucking of new tunnel connection. Old 25-mgd triple-expansion piston pump (at left) is due for replacement by new 75-mgd centrifugal pump. (ENR photos)

1,800 gpm, based on a rough calibration of the flow. The Roseland end of the tunnel was entered on May 3.

• **Diver got the bends**—Although in stopping the leakage the diver had been working under 90 ft of water pressure, he had suffered no ill effects in previous work in the same shaft. This time he was under water for 1 hr 35 min. After being brought up as usual with no delays, he entered the recompression tank for a total of 1 hr for recompression and gradual decompression.

This occurred about noon. Six hours later while at home the diver began to feel "bends," first in the hip joints. He started to drive himself back to the recompression tank but couldn't make it, and was returned by ambulance. He was recompressed and suffered no further ill effects.

• **Tunneling operations**—After the successful conclusion of all this preliminary work to block off the old tunnel at 79th and State St. and unwater it from there to Roseland, driving the short length of interconnecting tunnel was a relatively simple operation.

All mining of the 26-ft connection between the old tunnel under 104th St and the 10-ft dia branch line extending north from the 18½-ft screen shaft serving Roseland Station was done through the old wet well shaft. An electric hoist with head frame was mounted over the shaft. Mining of the tunnel was done by pneumatic drilling and light, cautious blasting.

• **Rush job**—Mining, lining and clean-up work was placed on a three-shift, 24-hr basis for two reasons: To meet the completion date of June 1 and (2) since the wet well at Roseland was unwatered the station was entirely dependent on its two turbine driven pumps, served by the Stewart Avenue tunnel.

Conditions were maintained, however, so that in case of the failure of one of these pumps the old tunnel could be restored to service in 2 to 3 hr and the standby pumps used.

During the mining and lining operations, only light pumping was necessary to take care of leakage reaching Roseland. Major leakage was removed by the pumps at 91st St. which operated two shifts per day.

The tunnel was holed through, and the last blast fired on May 19, leaving 26 ft of 10-ft dia., Chicago-Section tunnel to be lined with concrete.

• **Lining the tunnel**—Premixed concrete for lining the tunnel was delivered in 4-cu yd trucks, dumped into a hopper at the top of the 10-ft dia gate shaft just north of the screen shaft, and dropped into the tunnel through a line of 6-in. spiral welded pipe. The concrete lining was placed by hand, behind wood forms.

The entire job of mining, lining and clean-up was completed on May 28; just four days ahead of schedule. The following day, the old tunnel was refilled by opening the 12x12-in. bypass in the sluice gate at 79th and State St.

Refilling was accompanied by the introduction of chlorine at 79th St and 91st St and pumping at the Roseland shaft until water samples showed proper residual.

• **Future tunnel seal**—At some future date the wet well and its supply shaft at Roseland will be abandoned as a source of water, and all of the station's pumps will be connected to the screen shaft through the two suction tunnel.

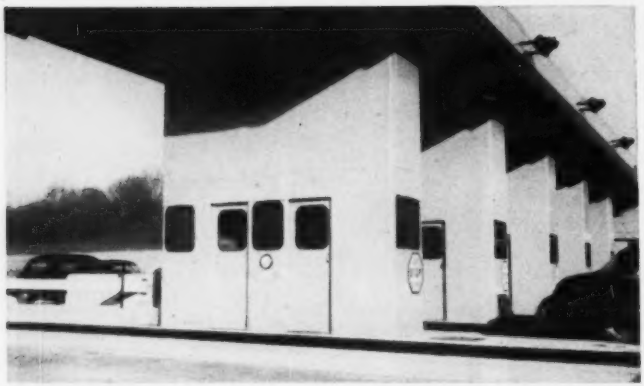
The abandonment of this shaft will necessitate sealing it off from the tunnel at the bottom. Provisions have been made to do this without again unwatering the tunnel.

The mouth of the old 9-ft tunnel at the shaft was partially closed by a concrete curtain wall; leaving a 3x6-ft opening sufficient to supply the two 25-mgd pumps now connected to the wet well. A steel plate gate was set in slots above this opening and hung from the top by two cables. By lowering this gate, when desired, the opening can be closed and the bottom of the shaft sealed off from the old tunnel with tremie-pipe concrete.

Installation of the curtain wall and steel-plate gate, and all clean-up work were performed by using the wet well and its supply shaft as a work shaft. Materials were lowered and muck was raised by an electric hoist located on a working platform atop the wet well. Muck buckets were transferred to an overhead crane in the pump room, transported and dumped into narrow-gage cars and hauled to a temporary spoil area just outside of the pumping station.

All work in connection with the new section of interconnecting tunnel and provisions for the future sealing of the bottom of the shaft of the wet well at Roseland Pumping Station was done by the Construction Division, Bureau of Engineering, Department of Public Works.

Arthur V. Schutz directed the work in the field. All operations and plans were in general charge of W. W. DeBerard, city engineer and Oscar E. Hewitt, commissioner of public works.



TOLL BOOTHS on the new extensions of the Pennsylvania Turnpike are of steel, prefabricated into large units for ease in assembly. Panels are bolted to facilitate replacement of damaged sections.

Prefabricated steel toll booths on Penn Turnpike extensions

PREFABRICATED and shop-assembled toll booths are being used on the western extension of the Pennsylvania Turnpike together with a canopy that also is shop-fabricated into the largest sections that can be handled conveniently at the site. These booths are built to designs developed initially for the eastern extension—which was opened last fall—to minimize the time required to design a toll structure for each location and to permit putting the extension into service at the earliest possible date.

The toll booths are fabricated of ¼-in. steel panels shop assembled on box-like columns of similar material bolted together and sealed with a lead seal in all joints. After the booth is completely assembled and tightened, the lead is pneumatically peened to form a smooth joint that is permanently watertight.

This construction was adopted after considerable study. Structures on high-speed highways having a heavy traffic density are subject to damage from collision and scraping of vehicles which may get out of control for a number of reasons.

The ¼-in. steel with deep return flanges at all joints results in a stiff and heavily reinforced structure which provides added safety for the toll collector. Bolted construction on the other hand, permits panels to be readily replaced with a minimum of labor and expense should any serious damages ever occur.

For the additional safety and comfort of the toll collectors, all glass is shatterproof and tinted to minimize glare. The glass also is heat-resistant, which helps keep the booth more comfortable in both winter and summer.

Another safety feature is the setting of the glass in an extruded rubber mold. A rubber expanding bead is worked into a formed groove to seal the glass in place and makes the entire assembly watertight. With this arrangement, no damage results to the glass from excessive loads as the entire panel will yield before breaking.

• **Heat and light**—Heating of the toll booths is by a system that consists of a motor-operated fan blowing air over steam coils in a unit mounted above the ceiling. The heated air travels through ducts into the wide side column of the booth, which acts as a vertical duct, and then discharges under the counter. Return is achieved through a perforated ceiling panel. In this manner recirculation and constant motion of the heated air results in very uniform temperatures throughout the booth. Steam for heating is generated in a service building adjoining the booths.

Thermostatic modulating control provides throttling of the steam valve so that air is circulated at approximately constant temperature at all times. In the summer the same fan is used to circulate air within the booth.

All wall and ceiling panels are insulated with three inches of preformed glass-wool insulation and the floor is made of 2-in. impregnated wood paving block.

As users of the Pensylvania Turnpike pay according to the distance traveled, a collector on an entering lane, during a busy day, may have to issue as many as 1,200 tickets per hour, each one selected from an appropriate tray, time-stamped and handed to the motorist. Consequently, the size, dimensions and location of storage cabinets for tickets, counter top, ticket issuing racks, time stamp, cash drawers, report form rack, and rubber stamp rack were each carefully studied and incorporated in the finished booth. Stainless steel was used for counter tops and other racks which are subject to severe service. Cash drawers are mounted on heavy-duty roller suspensions so they move freely when heavily loaded.

Each toll booth is shop assembled in two sections, the lower being shipped complete with doors, glass, interior furniture and electrical wiring and fixtures, thermostat and heating controls. The upper section includes the heating unit and roof drain connection.

On the eastern extension, four sections were shipped on a large flat trailer to the job where a motor crane lifted them onto anchor bolts previously set in the concrete foundations. As many as six booths were set up in one day in the field by a crew and one crane.

Structural members of the canopy are bent-up sections suitably stiffened with diaphragms and bolted to the top of the upper booth section. All members of the canopy are jointed by concealed bolts. The deck consists of formed 18-g stainless steel, supplied in ten-foot lengths, applied with monel drive screws. Fascia trim and gutters were similarly applied, the gutters being concealed behind the transverse girders and provided with a wrought iron pipe connecting to a leader concealed in the corner post of each booth.

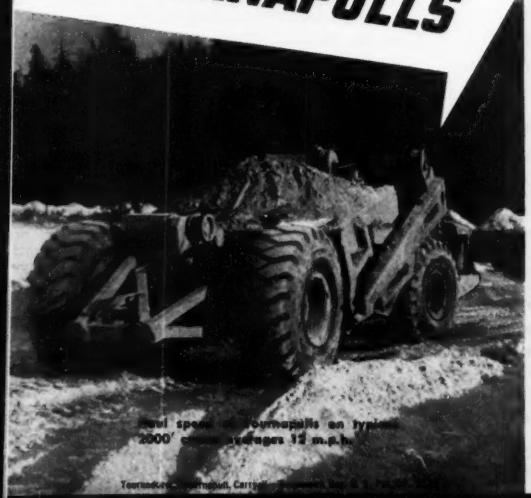
Canopy lighting units consist of an extruded aluminum member 20 ft long designed to recess into supporting girders of the canopy. Each contains six fluorescent tubes six feet long in two rows. To expedite field erection, all lighting units were completly shop wired with leads long enough to reach to a terminal strip.

These toll booths were designed by J. E. Greiner and Company, consulting engineers to the Pennsylvania Turnpike Commission, for which Roger B. Stone is chief engineer and John D. Paul assistant chief engineer.

Booths and canopies were detailed, shop fabricated and assembled by Taller & Cooper, Brooklyn, N. Y. Field erection on the eastern extension and at Pittsburgh was done by Brown, Davis & White, of Carlisle, Pa.

700,000 yds. for Montana logging road and rail spur

. . . being moved by C TOURNADOZER and 3 electric-control C TOURNAPULLS



J. Neils LUMBER CO., Libby, Montana, keeps a fleet of LeTourneau rubber-tired dirtmovers busy building truck roads and railroad grades. On their latest project — a 20 to 34-ft. wide road and parallel spur line near Rexford — Neils is using 3 C Tournapulls, a C Tournadozer, an FP Carryall, and a tractor-dozer to move 700,000 yds. of hardpan clay, rock, sand and gravel. The road is being built to enable Neils to remove 100 million ft. of timber under government contract . . . then will revert to the United States Forest Service which is engineering and supervising its construction.

741 pay yds. hourly on 600′ cycle

Checked recently on a typical 300′, one-way haul, each high-speed Tournapull made 26 trips per hour. Loads in alluvial sand and gravel, with Tournadozer as pusher, averaged 9½ pay yards each . . . load time varied from 35 to 50 sec. . . . spread time from 10 to 15 sec. Unit production: approximately 247 pay yards hourly.

369 pay yds. hourly on 2000′ cycle

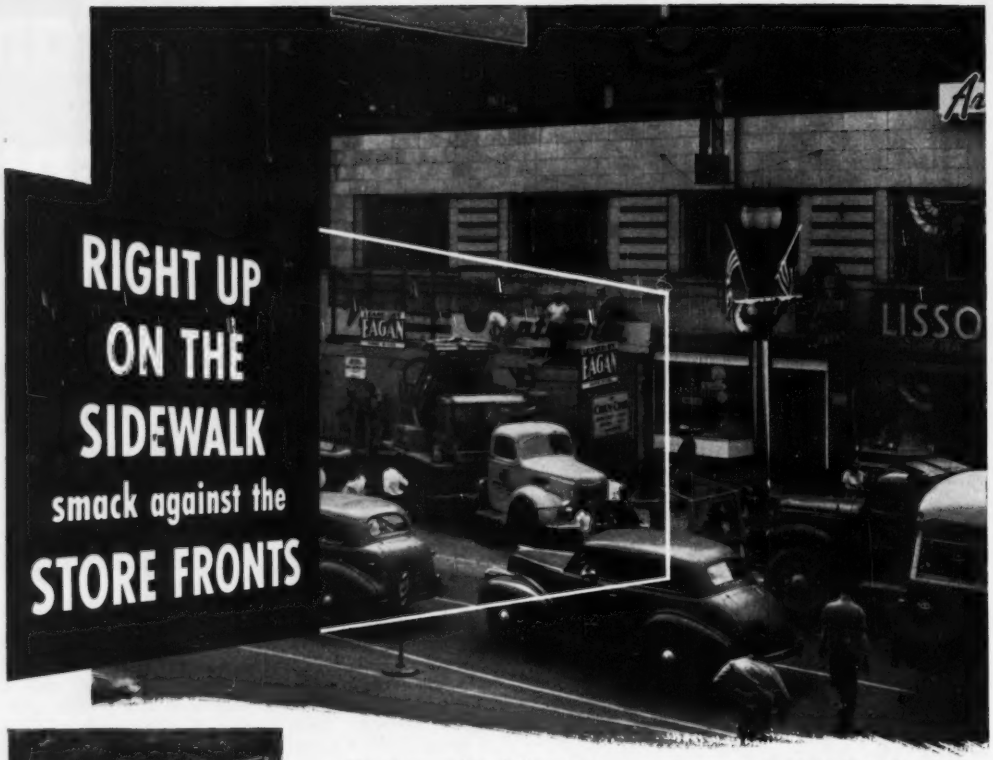
Performance of Tournapull has been equally good on longer hauls. Over 1000′ of rough road, each "C" regularly completes 13 trips per hour. Loads in hard-packed gravel, again obtained with Tournadozer as pusher, also average 9½ pay yards. Cycle time of 4.4 minutes includes ¾ minute to load and ½ minute to spread. Output on the 2000′ cycle: 123 pay yards per unit per hour.

See what modern Tournapulls and Tournadozers can do for you in *all* kinds of materials over *any* length haul. Ask your LeTourneau Distributor for job-proved facts and figures on work like yours.

R. G. LeTOURNEAU, INC., Peoria, Illinois

HIGH-SPEED, RUBBER-TIRED EXCAVATING • HAULING • LIFTING EQUIPMENT

RIGHT UP ON THE SIDEWALK smack against the STORE FRONTS



The job occurred in the heart of downtown Syracuse at one of the busiest intersections. Gradall's ability to work in close quarters avoided traffic troubles.

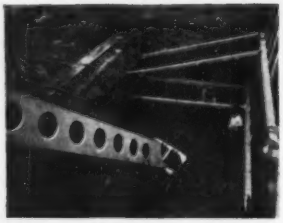


Photo above shows the rocks and concrete that had to be excavated.

Digging vertical walls in crowded quarters, around sewers and other utility lines called for utmost precision.

THE JOB—a deep, narrow excavation for a big electrical transformer. To contractors, the accompanying photos tell the story better than words. "Thanks to that telescoping boom," said the construction engineer on this job, "it's the only machine that could do it."

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READER COMMENT

Not unnecessary duplication

Sir: I am surprised and disturbed over the editorial, "Is Duplication a Cause of Shortages?" (ENR June 21, 1951, p 21) because what it states is contrary to the facts.

In the first place the towing tank is primarily an educational tool. For about fifty years all students from the U. S. Naval Academy who go into the field of ship design were sent to M.I.T. for their postgraduate training leading to a master's degree. Part of this educational program involves a research thesis. We have long felt the need of a towing tank which was adequate to permit competent work for this purpose. In addition to the postgraduate students destined for the Bureau of Ships, we of course have one of the few civilian naval arctitecture departments in the country, and for this purpose also a towing tank is needed.

It is, furthermore, a fact that the towing tank capacity of the country is far from adequate to meet the demand. It is true that the Navy has the largest and finest towing tank in the United States, but this is not the point.

The presence of the "imposing array of Navy 'brass'" was due to the interest of the Navy in this facility, and was not due to any effort, open or concealed, to get contracts from the Navy. If your writer knew how hard we at M.I.T. had been trying to avoid further contracts from the military or other government departments, he would not have had this thought in mind. After the close of World War II, we adopted a definite policy of cutting way down in the contract work because it was over-crowding our facilities and taking too much time from our educational staff. We have only taken on projects since World War II when there seemed to be a public duty to do so, and we certainly have not gone after any. At the present time our annual budget for research contracts is nearly twice that for our academic program, and we all realize that this is unsound and wish we could with honor get out of it.

Your editorial writer also apparently does not know the situation with reference to wind tunnels. Here, at least in the planning stage, control is exercised by the National Advisory Committee for Aeronautics, and I know from personal observations that this organization has evaluated very carefully the programs which have been submitted to Congress. As a matter of fact, Congress has not approved as large a program as this agency, which is composed of outstanding engineering and industrial representatives from both industry and government, deems necessary to meet the present situation.

I am also somewhat sensitive on the charges of duplication. During my tour of duty on the Research and Development Board, major emphasis was placed on elimination of waste and duplication. Certainly it cannot be said that all duplication was eliminated. A good deal of duplication which should have continued did get eliminated, but the point is that many hundreds of the outsanding scientists and engineers in the country worked very hard to examine programs for avoidable duplication, and to take action to eliminate it when found.

KARL COMPTON
Chairman of the Corporation
Massachusetts Institute of Technology
Cambridge, Mass.

Bridge savings unbelievable

Sir: Plato urged moderation in all things. Are not the savings of $130 per linear ft in the two Florida bridges (ENR May 31, p 36) somewhat immoderate?

It is stated that this saving was effected by changing from "conventional steel-girder construction." With rails, curbs, roadway slab, piers and foundations affected but slightly by the change, the saving can result only from changing from simple-span, riveted steel carrying both live and dead load to the construction used.

Perhaps a re-examination of figures is in order. A saving of $30 per ft appears probable; $130 per ft, improbable.

HOMER M. HADLEY
Consulting Engineer
Seattle, Wash.

Sir: Savings on these particular jobs were realized as much through the substructure construction as in the superstructure. Between a preliminary estimate based on four simple spans using three river piers and conventional cofferdam construction and the final design with three continuous-composite welded spans, the required weight of steel was reduced by about 40%. The two river piers constructed without cofferdams or pumping cut the substructure cost about in half as compared with three piers built in the usual manner.

The cost differential was a surprise to us and is not exaggerated.

W. E. DEAN
Engineer of Bridges
State Road Department of Florida
Tallahassee, Fla.

COMMENT
from the
BUTLER ENGINEER

August, 1951

Alas, Alack, Eheu and Dammit!

Long ago (but still within the memory of some of us who have since grown prematurely old and gray)—a manufacturer could plan production schedules, order his materials and in turn give firm delivery dates to his customers.

Sounds like a fairy tale—but, honest injun, it's the truth!

But for darn sure it's no fairy tale we're living in today. It's a ring-tailed, oscillating, first-class nightmare. Give a look: Vastly increased orders versus drastically cut steel supplies. Steel quotas for civilian use *slashed to 9% of mill production* . . . Moreover, we're legally required to fill defense orders up to 25% of our own production and, law or no law, every patriotic manufacturer feels it his duty voluntarily to accept that condition.

We even tried a crystal ball to find an answer, but the future was so chaotically confused the c.b. screamed horribly and burst into a thousand fragments.

Lord knows we're desperately trying to keep our customers happy. And our suppliers are doing their best for us, too.

But you and I and all of us are in the same boat (the good ship ULCER)—so let's not rock it.

■

I was talking with a brigadier general just recently returned from Korea. Upon his arrival in that devastated land he had met a bruised, battered and bandaged sergeant in the French Foreign Legion. "What's it like here in Korea?" asked my friend.

"Sir, zis is ze hell of a war—jus' hell!" Then, with great earnestness, "But better zan no war at all."

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

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WELL WATER SYSTEM CATALOG

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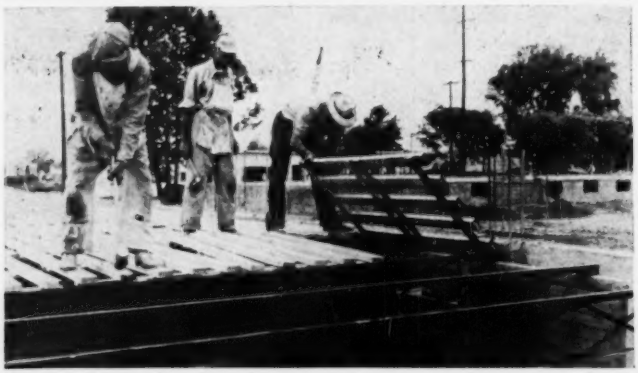
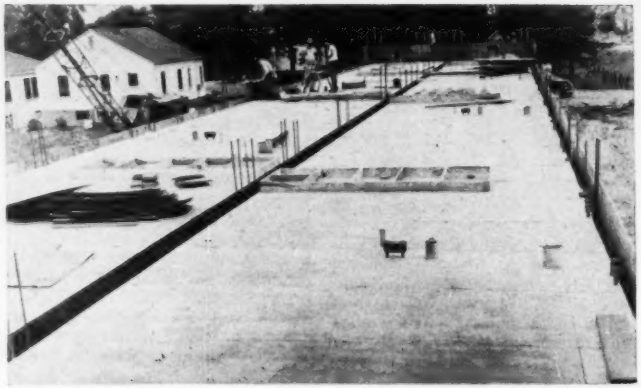
FIELD AND OFFICE



SUPPORTS for slab forms for Louisville, Ky., housing project consist of wood frames and open-web steel joists shored up from below.



SLAB FORMS are 4x12-ft wood panels ¼-in. thick. Masonite Corp. photos.

How to erect slab formwork fast

In producing 1,000,000 sq ft of smooth-ceiling concrete slab for a housing project in Louisvile, Ky., Geo. H. Rommel Co., Inc., developed a method of supporting formwork that speeded up the job.

With production at full stride, this contractor is placing 1,500 cu yd of concrete each five-day week.

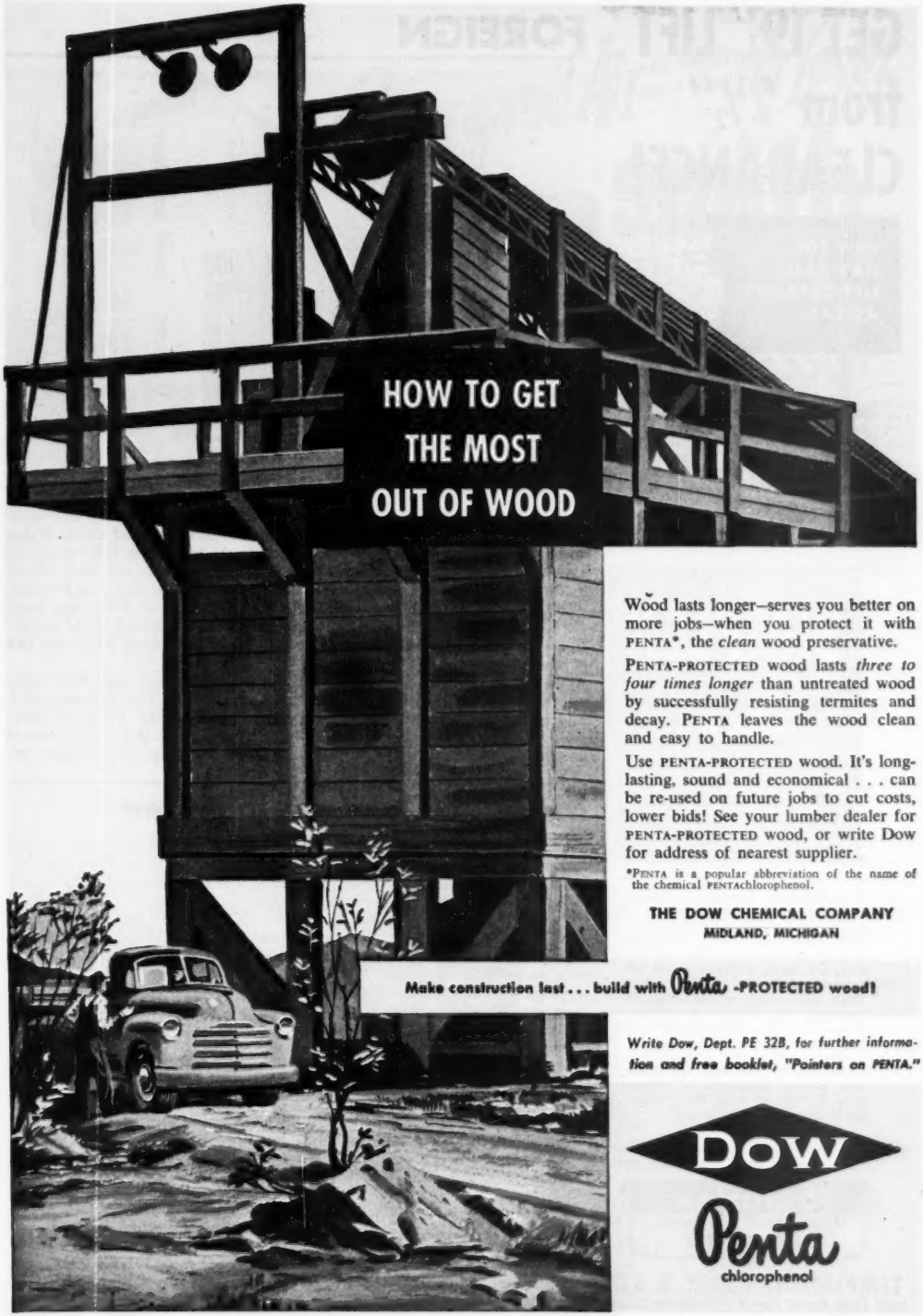
To obtain smooth surfaces for concrete beams, columns and undersides of floor slabs, which are to be left exposed, he uses forms made of ¼-in. thick compressed-wood panels. These he supports on wood frames, which in turn rest on removable open-web steel joists. Ends of the joists are supported on shored-up stringers. Both the compressod-wood forms and the wood frames are re-used many times.

Compressed-wood forms are 4x12 ft. Eliminating the need for plastering, they produce ceilings that are being painted directly without tedious and costly make-ready, the contractor reports.

Wood frames, which span between the steel joists, are built up of five 2x4's. Assembled with the 4-in. sides horizontal, the 2x4's are held 4½ in. apart by 1x4's.

The housing project is being built for the Louisville Municipal Housing Commission at a cost of $6,200,000. It consists of 55 two-story buildings, which will house 650 families in 3,000 rooms. About 36,000 cu yd of concrete will be used for these structures. Ground was broken in March, 1951; completion is expected in the fall of 1952.

The method of erecting slab forms was developed by W. H. Rommel. P. J. Hughes is construction superintendent. F. J. Hartstern and O. P. Ward of Louisville are architects.



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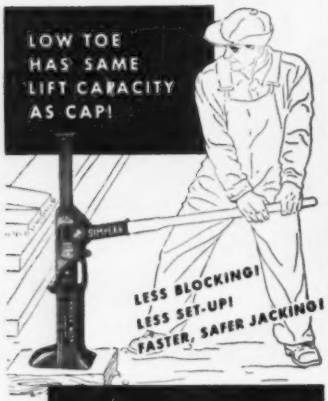

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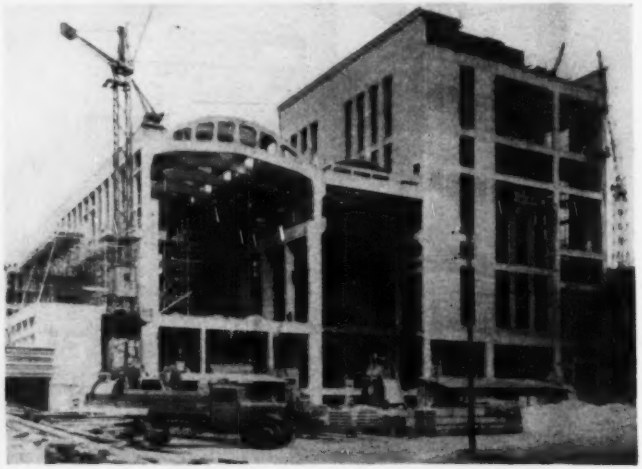


MORE POWER AND HEAT FOR PARIS will come from this new all-concrete addition to the Ivry plant on the Seine. Notable structural details are the 60 ft span Vierendeel trusses over the turbine-generator room; the 165 ft high boiler house; the walls faced with precast slabs of exposed fine-gravel concrete, which tests show will not show dirt in the industrial atmosphere; and the mat foundation over a sand stratum, which is confined within timber sheeting driven 15 ft to the level of the Seine River.

The plant is primarily for steam (1.1 million tons a year) which will be fed into the city's central heating system. But as a by-product it will also produce 200 million kwh of power a year.

The arrangement is for the boilers to feed a 40,000 kw two-stage, single shaft turbine with 530 deg C., 1270 psi steam to run a 50,000 kva generator. The city heating net is supplied through the variable back pressure exhaust of the turbine. The surplus steam goes to the low pressure turbine stage, which operates a condenser, or it can be exhausted into the old low pressure (300 psi) turbines of the existing plant on an adjacent site.

Italian Public Works in Review

The Italian Government now has under consideration public works programs affecting many of its rivers and railways amounting in cost to more than $200,000,000.

Most significant of the projects is a plan which would make the Tiber river navigable from Port of St. Paul in Rome to the sea. Part of the program would include the irrigation by gravity of 10,000 hectares of the Roman Ager, particularly in the reclaimed lands around Ostia.

Long desired in the interest of industrial and commercial development of Rome, the program would involve the construction of movable sluice gates and the opening of navigable basins to secure a draught of 4 to 5 meters.

Cost of the program is estimated at $200,000,000.

• **Flood control**—Already before the Italian Parliament and supported by the Minister of Public Works is a 100 billion lire ($160,000,000) program affecting all the work needed for the regulation of rivers and torrents and for flood control. The program is expected to cost 14 billion lire ($22,400,000) each in the fiscal years 1951 to 1952 and 1952 to 1953. In the six years following to 1959, cost of the flood control project is estimated at 12 billion lire or $19,300,000 a year.

Chief works contemplated follow:

(1) Drainage works along the Adige. Estimated cost of completing the general plan contemplated is put at $75,000,000 or 45 billion lire. Over long stretches of that river the river bed is on a gradient, so that overflow could be disastrous.

(2) A discharge canal for flood waters of the Arno at Pisa. The famous city and its province are in constant danger from the river, and at present prices the canal will cost 18 billion lire or $31,000,000.

(3) Regulation of the Tiber north of Rome. Cost of the project is esti-

mated at 3 billion lire to $4,800,000. For the protection of very important public works and for moderating the rise of the river in urban stretches during flood seasons.

(4) Regulation of the Volturno to protect the city of Capua and throughout the region at a cost of 2 billion lire or $3,200,000.

(5) Regulation of the Simeto and its tributaries, the Dittaino and the Gornalunga. For protection of the plain of Catania against floods in an area where land reclamation and irrigation work are now being carried out will cost some 6 billion lire or $9,600,000.

(6) Regulation of the Garigliano to cost 2 billion lire or $3,200,000.

• **A bed for Reno**—Already too popular is the bill passed by the Chamber authorizing an outlay of 5.5 billion lire or $9,000,000 for the bed of the Reno. A recent flood there led to the river's collapse, and overflowed 6,000 hectares of fertile land in Romagna, and threatened cities of Ferrara, Bologna and Ravenna.

The three cities are to be protected by rebuilding an old canal, known as the Napoleonic channel into which the waters of the river will be discharged when it is in flood. Cost of the program would be spaced over the next five fiscal years.

Meanwhile, railway reconstruction work during the past year was permanent, not patchwork style. Bridges reopened immediately after the war by temporary means and many sections of rails used to allow heavier traffic and higher speeds have had permanent replacements. The reopening of centralized switching apparatus has been hastened and telegraph and telephone cables and air lines have been completed. The following figures sum up the situation at the end of 1950. Figures between brackets show the pre-war situation as against that existing in 1945.

Rails, km. 27,675 (1939 km. 28,210; 1945 km. 21,130); iron bridges km. 66,765 (1939 km. 78,690, 1945 km. 43,710); bridges in masonry km. 227,166 (1939 km. 242,500; 1945 km. 174,200); tunnels km. 907,830 (1939 910,980, 1945 846,230); electrified lines km. 11,900 (1939 12,000; 1945 1,200).

Norway builds $37 million new aluminum plant

Plans have been published by the Norwegian Government for the construction of the large new aluminum plant at Sundalsora in West Norway. The plant's capacity will be 40,000 tons a year—almost as much

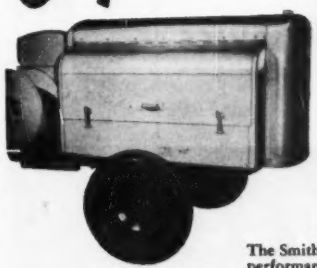
(Continued on page 52)

Compressed Air to handle most jobs For Less!

Smith

MODEL 105-P

AIR COMPRESSOR



Model 105-P. Has self-starter, battery ignition, voltage regulator, large radiator capacity with thermostat for quick warmup.

The Smith 105-P delivers smooth power, gives long performance, and will handle most of your compressor work, for less! Powered with Chrysler Ind. 15 Industrial Engine with 377 cu. in. displacement. Delivers 105 cu. ft. per minute. Has sodium cooled valves and Stellite valve seats in engine. Stainless steel disc type valves and Manganese Bronze seats in compressor. Heavy duty with light weight (2100 lbs.). *Write for literature and prices.*

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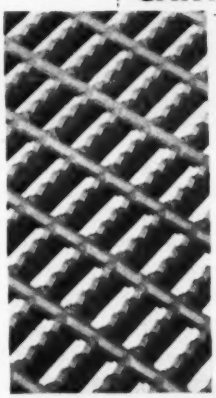

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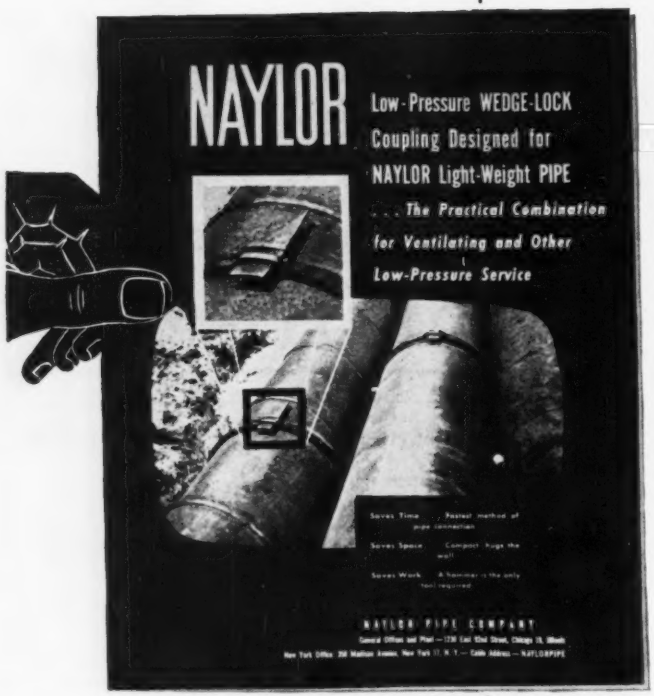
NAYLOR
Low-Pressure WEDGE-LOCK Coupling Designed for NAYLOR Light-Weight PIPE
. . . The Practical Combination for Ventilating and Other Low-Pressure Service
NAYLOR PIPE COMPANY

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New York Office, 350 Madison Avenue, New York 17, N.Y.

FOREIGN . . .

aluminum as Norway at present produces. Building operations are expected to take four or five years.

Capital requirements for the plant are estimated at $37.5 millions on the basis of prices prevailing in the first months of 1951. In addition, another $15 million will be required to expand the capacity of the Aura hydro-electric plant, which would supply power to the factory.

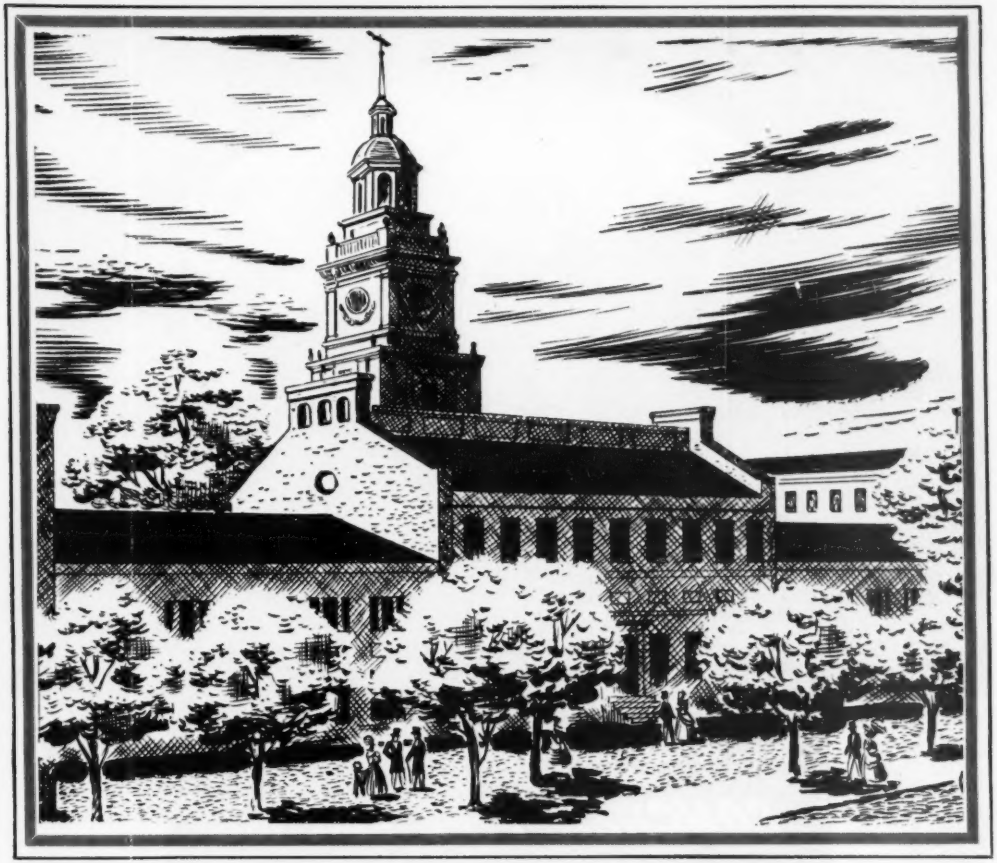
The plans are subject to funds being made available in foreign currency by the ECA for the purchase of machinery and equipment. These would eventually be paid for by exports of aluminum. The total amount of foreign currency required is placed at $18,500,000.

The new plant will employ 800-900 workers.

Foreign Briefs . . .

• **For Burmese ports**—Five major ports of Burma, damaged and deteriorated as a result of World War II, will be rebuilt and modernized with United States economic aid, the Economic Cooperation Administration has announced. The ports—Akyab, Bassein, Mergui, Moulmein and Tavoy—together handled half of Burma's prewar rice exports, a substantial part of the minerals, and much of the country's teak and rubber shipments. EGA has allocated $1,565,000 to finance the procurement of dredges, mooring and channel buoys, and pontoon jetties. Work already is under way on another project to rehabilitate Burma's principal port of Rangoon, for which ECA approved $1,000,000 of aid funds in February.

• **Egypt and Sudan agree**—Negotiations between Egypt and Sudan on irrigation water have proved successful. The Sudan government has agreed that Egypt should build a dam at Marawe, near the Fourth Cataract on the Nile, on condition that Sudan be allowed to heighten by one meter the Sennar Dam, further south. The Nile Water Agreement signed between Egypt and Sudan in 1929, and amended in 1946, provides that the Sennar Dam is not to be heightened before the construction of a dam on Lake Tsana, source of the Blue Nile in Ethiopia. This stipulation, however, has been waived by Egypt in view of the fact that Egypt will derive tremendous benefit from the proposed dam at Marawe, the storage capacity of which is estimated to range between two million and five million acre feet.



Philadelphia's Independence Hall, where the Liberty Bell is housed, as it looked 100 years ago

Philadelphia has cast iron water and gas mains in service that were laid well over a century ago. One of them is America's oldest cast iron water main, still functioning despite the radically changed conditions of street traffic and underground utility services in 100 years. The fact that cast iron pipe, laid generations ago, withstands the shock of heavy-duty traffic and the stresses caused by congested underground structures, amply demonstrates its shock-strength and beam-strength. Because of these strength factors and effective resistance to corrosion, cast iron water and gas mains, laid over 100 years ago, are still serving in the streets of more than 30 cities in the United States and Canada. **United States Pipe and Foundry Co., General Offices, Burlington, N. J. Plants and Sales Offices Throughout the U. S. A.**

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PIPE
FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

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4 reasons why CONCRETE PIPE gets the call for sewers

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1. AMPLE STRENGTH. Concrete pipe is so rugged it is able to resist severe impact, sustain heavy overburdens and withstand the wearing action of severe climatic or soil conditions.

2. OUTSTANDING DURABILITY. When you specify concrete pipe you assure long years of trouble-free operation. Many cities have had over a century of service from concrete pipe sewers.

3. MAXIMUM HYDRAULIC CAPACITY. The smooth interior walls and clean, even joints of concrete pipe resist abrasion from suspended matter and provide maximum carrying capacity.

4. UTMOST SAFETY. Concrete pipe's uniformly dense structure and tight joints assure minimum leakage and infiltration, thus helping to reduce contamination along the line and the overloading of sewage treatment plants.

Engineers and taxpayers also prefer concrete pipe sewers for their economy. They are moderate in first cost and serve far longer with little or no maintenance. The result is ***low-annual-cost*** sewer service—the true measure of pipe line economy.

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MUNICIPAL

RIVER TWINS—These two luxury apartment houses, each 19 stories high, are under construction on a new block front on Sutton Place South from East 53rd to 54th Streets, New York City. Unobstructed views will pour in through the window walls in five-sided living rooms and master bedrooms. Arthur Weiser is architect, Paul Tischman Co., Inc., contractor.

Pittsburgh's magic three: two down, one to go, this last a housing job

The Urban Redevelopment Authority of Pittsburgh has three redevelopment programs under way.

Physical work on two of the projects already is far advanced.

Steel erection on three buildings being built for the Equitable Life Assurance Society in the Gateway Center (the Point redevelopment area) is about 30 percent completed. One of these buildings will be 24 stories, the other two, 20 stories.

• **Steel it is**—Acquisition of land has been completed for the plant and railroad facilities in the Jones & Laughlin Steel Corporation industrial redevelopment project, East Carson Street, Southside, where foundations are in and steel work under way. Project to be completed this fall.

Meanwhile the Authority is asking the State Planning Board to contract with it allowing a $1,000,000 grant ear-marked for Pittsburgh to acquire property in the Hill redevelopment area. The site has been designated for housing construction. State law requires that state funds be used in connection with the construction of homes. The Authority has a reservation of $5,000,000 in Federal grant funds, which it intends to spend there.

The project differs from the Gateway Center and the Southside Industrial Redevelopments. Redevelopers

(*Continued on page 56*)

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TO drive piles fast you need jolting hammer blows delivered in rapid succession. You need Super-Vulcan! Delivering double the ordinary number of blows per minute, it socks piles down super quick to save you on time costs. And working on 25 to 35 per cent less steam, it gives you even greater operational savings.

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cannot pay the acquisition cost of the land. This cost must be written down from the value which the Authority will have to pay for the structures in the area, to the value of the land in the light of its proposed new use.

• **A first phase**—The Housing Authority of Pittsburgh, by agreement with the Redevelopment Authority, will become the "first phase" redeveloper of the area. It will manage the acquired properties before they are demolished, direct the job of relocation of families now living on the site, and direct the physical work of demolition and land preparation.

Because of the problem of relocation, the lower Hill project will not progress with the speed of the Gateway Center. Completion of the redeveloped area may take five years.

The state contribution will count as a matching fund against the Federal allotment. The city's contribution will be made in the form of the reconstruction of streets and utilities that will serve the redeveloped area, and in the donation of certain publicly owned properties within it.

The redevelopment area covers more than 100 acres and a housing area of approximately 30 acres will be provided, to be redeveloped either by private investors or by the Pittsburgh Housing Authority.

• During these days of uncertain deliveries, many trucks, bodies and hoists are carrying heavier-than-usual work-loads . . . under conditions that place extra stress and wear on valuable equipment.

More and more, truck owners are benefiting from efficient, dependable—more profitable dumping service . . . through regular maintenance and prompt repair of existing equipment.

Your near-by Marion distributor can furnish genuine Marion parts and factory "know-how" for all of your service and repair requirements.

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Seattle water use hits high

Water consumption reached an all-time peak of 199,500,000 gallons June 25 at Seattle, Wash., during a dry spell that threatened to dry out the city's lawns despite the hose-wielding proclivities of their owners. June proved to be the driest period in 29 years, with temperatures reaching into the 90s.

Since capacity of the city's water transmission mains are 166,000,000 gallons a day, reservoir storage was reduced some 60% to 270,500,000 gallons. To conserve water, watering of city parks and golf courses was halted for a week and use of water in sewer-system flush tanks was restricted, saving a total of 15,000,000 gallons daily.

The situation eased in early July, with lower temperatures and .02-in. of rain.

Escrow and tax exemption figure for toll bridge

St. Louis' Board of Public Service has granted permits to both St. Clair County, Illinois, and the Village of Cahokia, Ill., for the right to construct, maintain and operate a toll bridge across the Mississippi River from Cahokia to the St. Louis Shore.

The two governmental agencies contemplate two different directions for te bridge, one to come out near President and Winnebage streets in St. Louis, the other near Chippewa (that of the village of Cahokia).

The aldermen of St. Louis must pass on the bills authorized by the Board of Public Service touching bridge approaches. The bill for the Cahokia bridge would set up a $2,400,000 escrow fund to pay the cost of widening Chippewa street and the construction of an under or over-pass in St. Louis. There is no provision for tax-exemption of the bridge, but payments of $160,000 annually over 15 years are provided for the street widening are assured.

But Frank J. McDevitt, president of the Board of Public Service, says the New York house of Shields & Co., states that it would not purchase bridge bonds unless the city of St. Louis would exempt the bridge from taxes as long as any of the bonds were outstanding and unpaid.

The St. Clair County bridge bill makes no mention of escrow for the western bridge approaches.

Total cost of the bridge ranges between $7,000,000 to $8,000,000.

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For the complete story on this history-making I-R Portable, and the new Ingersoll-Rand FM-3 Wagon Drill see your nearest Ingersoll-Rand representative—or write to our New York office.

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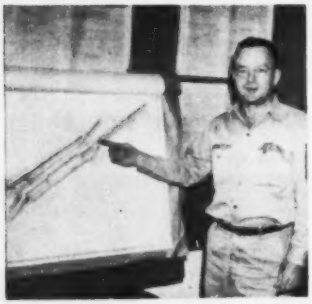

Walter C. Knox is resident engineer for the Jim Woodruff lock and dam project of the Mobile District, Corps of Engineers, downstream from where the Chattahoochee and Flint rivers join to form the Apalachicola River in Florida. He is Cornell, 1929, graduate and started with the Engineers in the Norfolk District and since 1932 has worked along the Gulf Coast until the last 4½ years when he has been assistant resident engineer for Allatoona Dam, James M. Polatty, a graduate of the University of South Carolina, is assistant resident engineer.

New appointments

Highway Departments

Harold L. Aitken has been appointed state engineer of Nebraska by Gov. Val Peterson. He is a veteran of 20 years with the United States Bureau of Public Roads, was stationed in the Nebraska office in 1946. He succeeds Fred Klietsch in the post of director of the Nebraska Department of Roads and Irrigation. Mr. Klietsch has taken over the Bureau of Irrigation.

William A. Bugge will continue as state highway director under the newly established Washington State Highway Commission. Fred Redmon of Yakima, a road contractor, has been elected chairman of the commission.

John H. Davis of Nashville, N. C., and Sam Jones of Whiteville, N. C., have joined the North Carolina State Highway Department office at Louisburg.

Ralph F. Johnson has been named highway engineer of Branch County, Mich., succeeding Howard G. Minier, who resigned the post to become highway engineer for Washtenaw County. Johnson was assistant road engineer for Allegan County, also of Michigan.

Robert J. Kimley of Greensboro, N. C., holder of a masters degree in civil engineering from North Carolina State College has been named traffic engineer with the city zoning and planning department at Greensboro (a newly created position).

Lloyd J. Knuth is now highway engineer for Steel County at Owatonna, Minn. Succeeding Mr. Knuth, who was Wadena county highway engineer is Ben Jacobson who has been working at the Minnesota State Highway Department for several years and has recently been with its St. Paul, Minn. testing laboratories.

Walter B. McKendrick, Jr., former assistant chief engineer of the Delaware State Highway Department, has been named an assistant engineer of the Wilmington, Del., Water Department. Also named was **Edwin Murdough** to the post of resident engineer for the department's new rapid sand filter plant at Porter Reservoir. McKendrick is a former president of the Association of Highway Officials of the North Atlantic States.

Lester W. Novinger, formerly of the Pennsylvania Department of Highways, has been appointed plans and design engineer of the Delaware State Highway Department. He succeeds **Chauncey O. Simpson,** now assistant engineer in charge of suburban developments and public utilities.

George H. Wellner, project engineer of the Minnesota State Highway Department has become the Lake of the Woods County highway engineer effective at once.

State, City and County

Frances Byerly is new city engineer of Walpeton, N. D. He has been doing construction work at Ortonville, Minn.

4-YEAR APPOINTMENT—Alfred Merrit Smith, left, who had been Nevada State Engineer since 1935, turned over his duties to Hugh Shamberger, 51, who had been assistant to Smith since 1942. Smith resigned for reasons of health, and his successor was appointed to a 4-year term.—Dondero photo.

Clarence W. Classen has become chairman of the Ohio River Water Sanitation Commission. Formerly he was chief sanitary engineer of the Illinois Department of Health and technical secretary of that state's sanitary water board. He succeeds Henry Ward, chairman of the Kentucky Conservation Commission.

A. F. Davies, foreman of the Santa Barbara (Calif.) Water Department is now superintendent of operation for the new San Luis Obispo City water filtration plant.

Patrick M. Corry, left, engineer member of Warren & Witmore, architects has been re-elected treasurer of the New York State Society of Professional Engineers for the 24th successive time. D. B. Steinman, consulting engineer, presented Mr. Corry with a certificate commemorating the occasion during the recent Silver Anniversary Convention in New York City.

George Lumm has been named chairman of the Fremont, O., Planning Commission. John Starn has been named secretary.

William H. Mortensen, has been appointed chairman of the State Development Commission. Mortensen has been managing director of Bushnell Memorial, Hartford, Conn.

M. L. O'Neale, chief engineer for the commission has been appointed engineer-director of the new State Road Commission division of West Virginia. Other members of the division are Cline T. Jackson, state supervisor, and Donald L. Schaffer, technical assistant.

Raymond R. Ribal, new chief engineer-manager of Orange County, Calif., Sanitation districts has been assistant city engineer of Oakland, Calif. Nelson Launer, manager of the Orange County Joint Outfall Sewer System has been serving for the past year under temporary appointment as administrative officer for the sanitation districts, on a loan basis.

T. C. Schaetzle, senior associate engineer at the Akron, O., sewage treatment plant has been elected to represent Ohio as a director of the National Conference on Sewage and Industrial Waste.

Joseph S. Strohmeyer, for 43 years with the Baltimore, Md., Water Bureau has been named water engineer for the city. He succeeds Leon Small, who has retired.

George W. Stocking has been named city engineer for Redwood Falls, Minn. He comes there from Lemmon, S. D. where he had been working with the Bureau of Reclamation.

Harry Paine, formerly city engineer of Wahpeton, N. D., has taken the position of city engineer at Bemidji, Minn., where he served for a time as county highway engineer.

Dr. Russell E. Teague has been named a member of the finance committee of the Ohio River Valley Water Sanitation Commission. He is state secretary of health and chairman of the Sanitary Water Board of Pennsylvania.

Norman M. Winch, sanitary engineer for Portland, Me., city health department was formerly associated with the Wayne County, Mich., health department.

Business changes

INDUSTRIAL AND COMMERCIAL

Erastus B. Badger, president of E. B. Badger & Sons, was elected a director of Stone & Webster recently, and Ralph D. Waterman has become vice-president of the firm.

H. E. Casey, civil engineer with Owens-Illinois Glass Co., Toledo, has been appointed manager of structural product sales for the Kaylo Division, makers of insulating and building products made of hydrous calcium silicate.

Louis E. De Turk, 11 years an engineer with Indianapolis Power & Light Co., has joined the firm of Garns & Moore and Associates, architects and engineers, Indianapolis.

Robert M. Lundgren has been appointed vice-president of the Kuljian Corp., international engineering and construction firm with headquarters in New York and a branch in Washington, D. C.

Horace F. Altman has been appointed comptroller of the George B. H. Macomber Co., Boston building firm. Prior to his connection with Macomber, Altman was Deputy Director of the Massachusetts State Housing Board.

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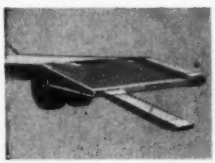
HAND BRAKE

Increases braking power . . . relieves tension on tractor brakes while holding loads on inclines, or for level parking. Ideal for locking trailer while hooking tractor. Located on left side of gooseneck.



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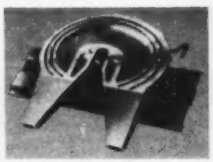
Increases platform area . . . lowers rear loading point, thus making load easier, safer without use of conventional skids. Short pair of hinged skids (shown) available at slight additional cost.



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Choice of Holland or Austin designs with capacities from 24,000 to 60,000 lbs. for handling gross king pin loads both on and off highway. Semi-automatic, full floating types with rubber mounting.

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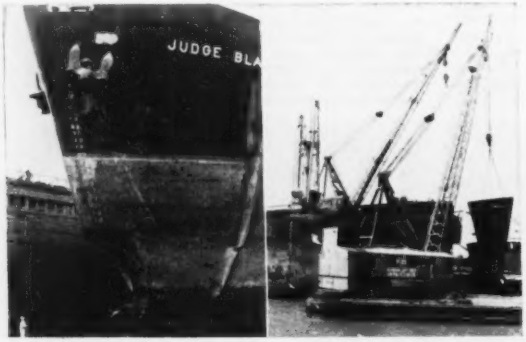
PREVIEWS
from the
CROSBY CLIPPER

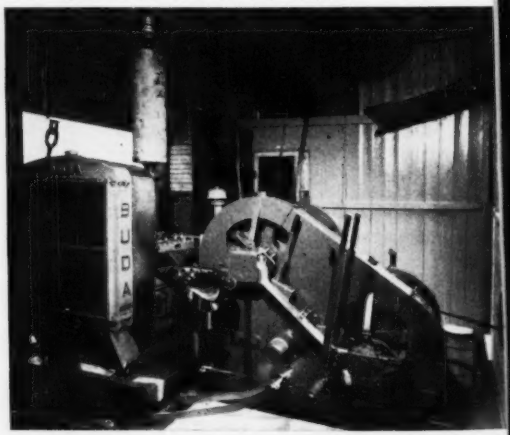
These are excerpts from stories in the current issue of American Hoist & Derrick Company's house magazine, the American Crosby Clipper. If your business involves the use of hoists, derricks, locomotive cranes, revolver cranes, Crosby Clips or other equipment in our line, why not let us put your name on the mailing list. Use coupon on right hand page, to start with the current issue.

How to pull scattered shops together. A. Finkl Sons Co., long-established Chicago forging compan grew up in a city that grew too fast. Plant No. 4 is fo blocks away from No. 1. No. 2 is a block from No. Yet huge, heavy ingots and billets must move swift between them all. To meet this dilemma, Finkl uses 30-ton American Locomotive Crane . . . achieves fas deft movement of biggest loads at lowest cost.

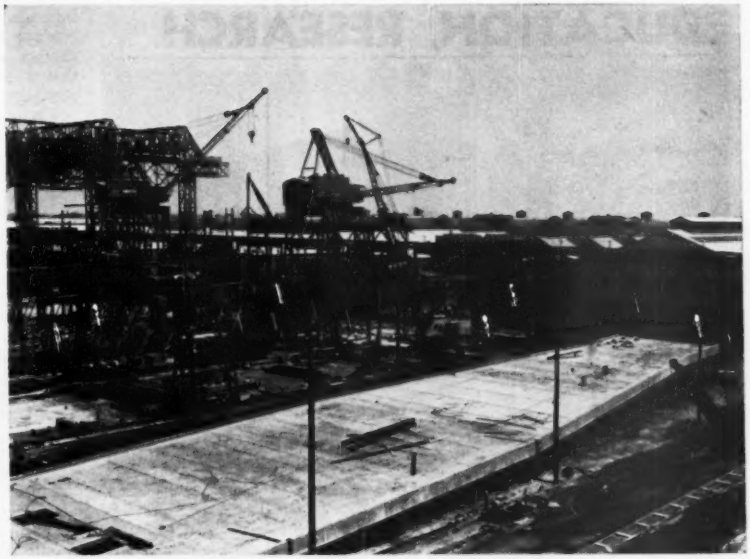


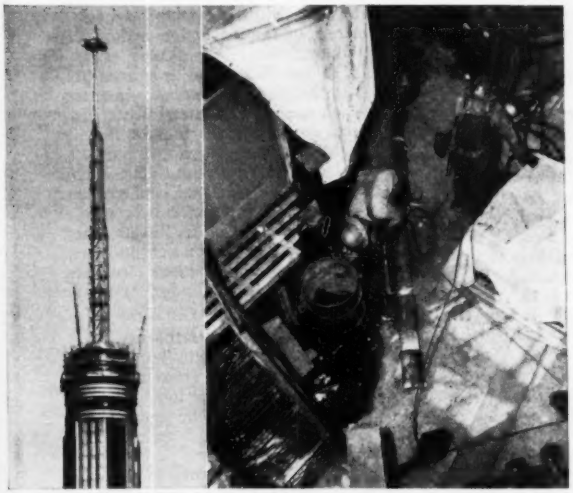
New nose for Judge Bland. Traveling at full speed with a full load, the freighter *Judge Bland* hit a reef, crushed its bow, needed a whole new fore-section. So Alabama Dry Dock & Shipbuilding Co. cut the ship apart afloat, built massive new bow sections. To swing and place these enormous assemblies, they used a pair of American Revolver Cranes—one barge mounted, one on traveling gantry shown above. For more pictures of this ingenious job, see story in the current *Crosby Clipper*.

New remedy for New York Harbor congestion. A port authorities continue to wrinkle brows over inad quate cargo handling facilities, a Lee & Simmons lighte the *Harding*, is loading and unloading faster than ev before. Reason is a new gasoline-powered America Hoist, replacing a slow, space-wasting steam plant. Th compact new plant (shown below) goes to work fast and requires far less maintenance. For "before an after" pictures, see the *Crosby Clipper*.



New technique at Newport News. Last word in modern shipbuilding is subassembly of huge components which are then fitted into the final hull. Since these units can weigh up to 100 tons each, shipways had to be redesigned to utilize fully this new technique. Stronger, heavier concrete ways replaced old, short-lived wooden structures. Heaviest new cranes selected were American R-30 Revolvers, shown on new rail platforms in picture. Entire project was designed by Newport News Shipbuilding and Drydock Company's engineer's office.





Better TV reception for millions. World's tallest building, the Empire State, is now 222 feet taller. Antenna on top of new steel TV tower will begin transmitting this year, for ABC, CBS, Dumont, NBC and other stations. All sets within 52 miles will be able to focus directly on the tower . . . first commercial simultaneous transmission from a single point. Built from the inside, tower's component parts were lifted via elevator shafts. Crosby Wire Rope Clips and American load-rated Blocks were used on the job.

Handiwinch goes underground. American Handiwinch is drawing new copper tubing through old gas lines for the Consumers Power Company of Lansing, Michigan. Saves time and cost of digging out old lines. Complete story in the *Crosby Clipper.*

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EDUCATION, RESEARCH

INTERMITTENT HEAT AT LOWER COST—Cafeteria (ground floor) and auditorium (above) for the E. River School in Atlanta, Ga. To supply heat and ventilation only when needed, the Dravo Corp., Pittsburgh, installed two industrial type, direct-fired, warm air space heaters with high air-handling capacity and quick-heating ability. Fresh air inlets and exhaust outlets are shown in the walls. The rectangular building is constructed of steel framing with brick facing and measures 85 ft by 60 ft. Auditorium and cafeteria heating and ventilating are handled by one space heater for each, with an output of 500,000 Btu per hour.

Research reports aid builders, designers

Many of the research reports presented at the annual meeting of the American Society for Testing Materials last June contained information of value to designers and builders. The reports covered almost all types of building materials—concrete, plaster, soils, sandwich constructions, steel and acoustical materials. Here are brief summaries of some of the more significant reports:

• **Abrasion resistance**—This property improves as compressive strength increases. Air content is influential only to the extent it affects compressive strength. For concretes of equal air content, abrasion resistance is inversely proportional to the water-cement ratio.

Both abrasion resistance and compressive strength vary inversely with the voids-cement ratio, regardless of the water-cement ratio, or the water, cement or air content.—L. P. Witte and J. E. Backstrom, materials engineers, Bureau of Reclamation, Denver, Colo.

• **Setting time**—To study changes occurring in concrete during the setting period, researchers measured the velocity of propogation of small mechanical impulses impressed on green concrete.

Initial velocities were found to be low—about 4,000 fps. During the early hours, however, velocity increased at a rapid rate. After 4¼ to 8½ hr, the rate of increase of velocity suddenly changed, slowing up considerably. The time at which this occurred was taken as the time of set of the concrete and was of the same order as that measured with Gillmore needles.

The author foresaw applications of this method to better evaluation of construction practices—possibly to more exact determinations of time for safe removal of forms.—E. A. Whitehurst, research engineer, Purdue University, Lafayette, Ind.

• **Freezing and thawing**—High-alkali content of some cements may have an adverse affect on the resistance to freezing and thawing of concrete made with some types of aggregates.

Tests made on concretes containing aggregates from Rock Island, Wash., showed this resistance to be increasingly poor as the alkali content of cement is increased. These aggregates are normal in the properties usually measured, and many showed insignificant expansion when mixed with high-alkali cements. Addition of an air-entraining agent to concrete containing Rock Island aggregates and high-alkali cement to bring the air content to 3 to 6% raised the resistance to freezing and thawing to that of concrete made with low-alkali cement.

The author believes it probable that air entrainment will improve the resistance of concretes made with high-alkali cements and other troublesome aggregates.—Bailey Tremper, materials and research engineer, Washington Department of Highways, Olympia, Wash.

Plaster

• **Chemical changes**—Atmospheric carbonation of the calcium-hydroxide fraction of white-coat plasters occurs with great rapidity, particularly during the first several days of exposure. At the end of several months, the hydroxide, which is deleterious when in contact with paint or wallpaper, is converted to innocuous calcium carbonate. The rate of carbonation, however, varies to a great extent with the particular brand and type of lime hydrate in the plaster. Retention of free or adsorbed water also varies considerably, as does the rate of hydration of the magnesium-hydrooxide portion.

Positive evidence of carbonation of the magnesium-hydroxide fraction, which might be a cause of plaster failures, could not be found. But it might occur.

Hydration of calcium sulfate hemihydrate may be delayed, and gypsum may slowly dehydrate at later ages.—J. A. Murray and H. C. Fischer, associate professor and research associate, respectively, Massachusetts Institute of Technology, Cambridge, Mass.

Sandwich Construction

• **Paper cores** — Resin-impregnated paper cores show the greatest strength when they are formed into square or nearly square cells. The square shape provides the strongest structure for the least weight.

Tests show: Compressive strength varies as the 5/3 power of the specific gravity of a core. Shear strength is directly proportional to specific gravity. Good thermal insulation can be obtained with paper cell cores of reasonable thickness.

The author concludes that it is possible to build durable, satisfactory houses with paper honeycomb cores in wall, floor and roof panels.—Edward W. Kuenzi,, Forest Products Laboratory, Madison, Wis.

• **Ceramic cores**—Tests show that core materials made of cellular glass or calcium hydrosilicate 2 in. thick, faced with thin plywood, asbestos-cement board or steel-surfaced hardboard,

have a stiffness and flexural strength adequate for many building applications.–G. M. Rapp, assistant executive director, John B. Pierce Foundation, Raritan, N. J.

• **Aluminum core**–Strength of aluminum-foil honeycomb cores varies directly with the density of the core. Standardization of the cell size (at ⅜ in., with densitiy range of 3 to 8 lb per cu ft obtainable with foil thicknesses of 2 to 6 mils) has resulted in volume production and increased applications. Advantages of this material are uniform density, high specific strength, high shearing modulus, and resistance to environmental effects, with constant strength under variable humidity and temperature conditions. –T. P. Pajak, head of the Sandwich Structures Unit, Materials Laboratory, The Glenn L. Martin Co., Baltimore, Md.

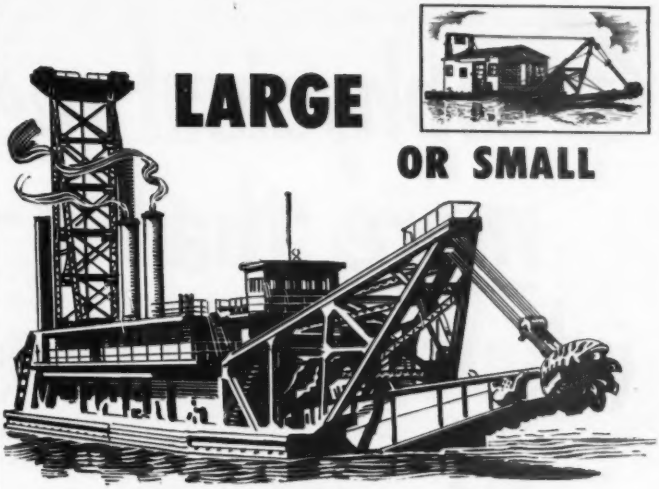
Soils

• **Geophysical reconnaisance** – Geophysics is a useful exploration tool at sites where the amount of rock to be stripped is a factor.

Seismic and resistivity depth measurements were carried out at Folsom Dam site, for example, at and near drill holes from which detailed information on the character and degree of weathering of the rock and the depth to sound rock had been secured. This work permitted direct comparison between depths obtained by core drilling and by geophysical methods. Results on the average checked within 4 ft.–Dart Wantland, geophysicist, U. S. Bureau of Reclamation, Denver, Colo.

• **Pedological method**–This has been developed on the principal that soils can be classified in place by means of soil profile characteristics; that soils having similar profiles require similar engineering treatment, and soils with similar profiles occur in similar types of landscape. A large section of the U. S. has been mapped by the pedological system and the nomenclature has been established on a nationwide basis. Information can be obtained from county agricultural maps, aerial photographs and geologic maps.

With any or all of these, a soil engineer can be informed, prior to visiting a site, as to the soil series, land forms and drainage conditions that are likely to be encountered. With a chart on texture and origin, he can narrow down the soil group to so few types that it is simple for him to identify the soil type in a particular location when he inspects the site. Costly field sampling and laboratory testing are greatly reduced or eliminated.–R. L. Greenman, assistant engineer of soils, Michigan State Highway Department, Lansing, Mich.



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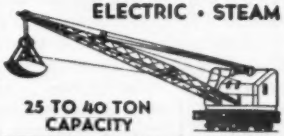

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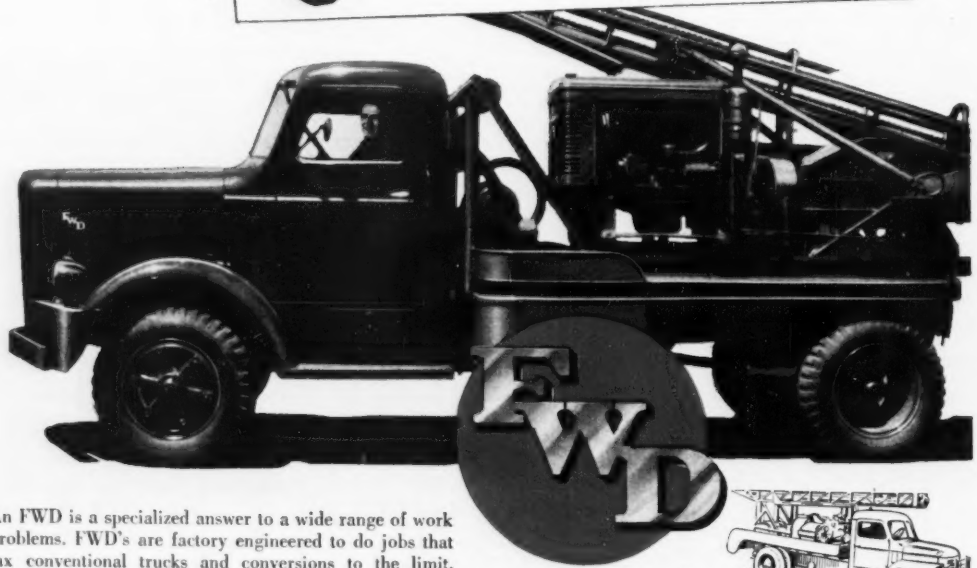

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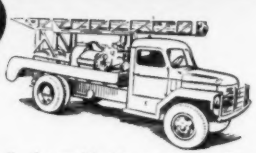

In the world-wide search for oil — you'll see more and more FWD's like these — equipped with drill rigs — serving as water carriers — mounting instruments — hauling explosives. Models range from 14,500 to 60,000 lbs, GVW — 4 and 6 wheel drive.

MEETINGS

The American Institute of Architects, sponsored by the Building Research Advisory Board of the National Research Council, is planning a conference in October to discuss building problems connected with the utilization of nuclear energy in laboratories and hospitals. The program will be devoted entirely to better building construction for peacetime uses of nuclear energy. Subjects to be discussed include shielding from radiation; waste disposal; air supply and ventilation for hoods; building materials and finishes not easily contaminated; and architectural designs for tracer laboratories. The meetings will be held at the National Research Council. Tentative dates are October 22 and 23. Anyone interested in attending should contact Wm. H. Scheick, executive director, Building Research Advisory Board, National Research Council, 2101 Constitution Ave., Washington, D. C.

Ohio Ready Mix Concrete Assn. has elected Herbert Rusk, Mansfield, as president and Claud L. Clark, Columbus, was re-elected secretary-treasurer.

The Erie County Chapter, New York State Society of Professional Engineers, has urged the City Council of Buffalo to create an appeals board for settlement of disputes stemming from interpretation of city building ordinances.

The Proceedings of the National Conference on Industrial Hydraulics for the 1950 meetings are now available, in bound volumes the fourth in a series, and contains all of the technical papers presented at the sixth annual meeting October 18-19, 1950. The volumes are offered at cost to those intcrested in purchasing them. The next meeting of the conference will be at the Hotel Sherman, Miami, Florida, on the days between November 12-16 of this year.

CALENDAR

National Conference on Prestressed Concrete, Massachusetts Institute of Technology, Cambridge, Mass., Aug. 14-16.

Canadian section, American Sewage and Sanitation Equipment Association, Royal York Hotel, Toronto, Ont., Aug. 20-22.

New England Water Works Association, Hotel Statler, Boston, Mass., Sept. 10-12.

Minnesota section, American Water Works Association, fall meeting, Hotel Nicollet, Minneapolis, Sept. 12-14.

N. Y. section American Water Works Association, fall meeting, Whiteface Inn, Lake Placid, N. Y., Sept. 13-14.

Public Works Congress and Equipment Show, Memorial Bldg., Detroit, Mich. Sept. 16-19.

Pennsylvania section, American Water Works Association, Bellevue-Stratford Hotel, Philadelphia, Pa., Sept. 19-21.

Kentucky-Tennessee section, American Water Works Association, fall meeting, Louisville Kentucky Hotel, Louisville, Ky., Sept. 17-19.

Michigan section, American Water Works Association, fall meeting, Whitcomb Hotel, St. Joseph, Sept. 19-21.

Rocky Mountain section, American Water Works Association, fall meeting, Hotel Cosmopolitan, Denver, Colo., Sept. 24-25.

9th International Road Congress, Permanent International Association of Road Congresses, Lisbon, Portugal, Sept. 24-29.

Alabama-Mississippi section, American Water Works Association, Buena Vista Hotel, Biloxi, Miss., Sept. 24-26.

Wisconsin section, American Water Works Association, fall meeting, Pfister Hotel, Milwaukee, Sept. 25-27.

Ohio section, American Water Works Association, fall meeting, Commodore Perry Hotel, Toledo, Ohio, Sept. 27-28.

Missouri section, American Water Works Association, Hotel Robidoux, St. Joseph, Mo., Sept. 30-Oct. 2.

National Standardization Conference, Waldorf-Astoria Hotel, N. Y. City, Oct. 22-24.

Construction with Permalite lightweight aggregates

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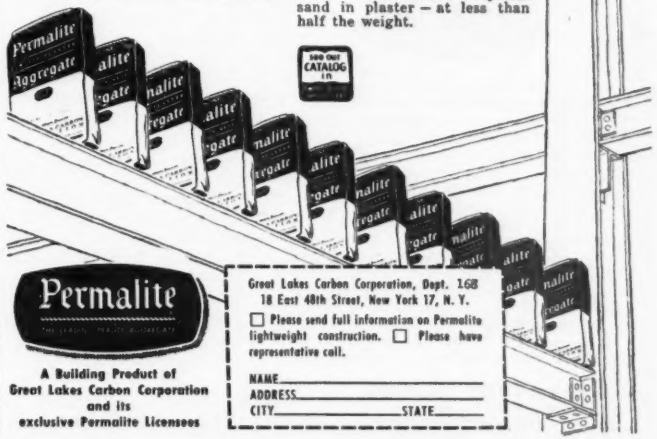

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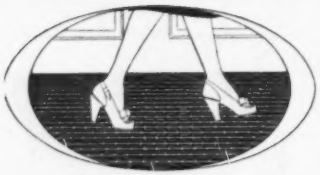

No object over ½ square inch can pass through super-safe U-Type Tri-Lok Flooring. It is unsurpassed for plant installation, walkways, loading platforms. Maximum strength, air and light with minimum weight. Efficient distribution of concentrated loads. Write for Bulletin JX 1140.

The Tri-Lok Company is also equipped to furnish *riveted* and Tri-Forge *welded* open steel flooring. Tri-Lok can be furnished in a variety of metals, including aluminum alloy, stainless steel, etc.

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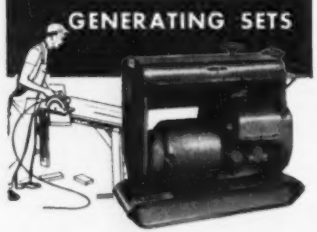

If you have a problem in power supply for a construction job; lighting an airfield or boat landing; power and light for a tourist court, summer camp or restaurant; lighting and heating country schools or churches; or for any other similar purpose, get the facts about dependable Fairbanks-Morse Generating Sets.

They are available in capacities from 600 to 35,000 watts, A.C. or D.C., and equipped with manual, remote or automatic starting devices. For details, see the Fairbanks-Morse dealer nearest you, or write Fairbanks, Morse & Co., Chicago 5, Ill.

FAIRBANKS-MORSE,
a name worth remembering

OBITUARY

Elmer L. Martin, 71, Dallas contractor and railroad engineer, died in Dallas July 5. In 1939 Martin became a partner with Joe W. Grace of Dallas in the firm of Martin and Grace, Inc., which shortly joined with L. P. Reed to build the $16,000,000 Whitney Dam near Waco. In 1922 Mr. Martin first entered the contracting field, specializing in railroad construction and general building as well. Previous to that he had been assistant engineer, assistant superintendent, construction engineer, maintenance of way engineer, and chief engineer respectively with the Missouri-Kansas-Texas Railway at Denison, Tex. After graduating from Texas A. and M. College in 1899 he served with the Kansas City Southern and Southern Pacific Lines at Lafayette, La. Building projects in his career included the U. S. Public Health Service Hospital near Fort Worth, and several hundred miles of railroad during World War II which were important militarily.

Andrew Wingate McLimont, 81, former president and general manager of Winnipeg Electric Co., died July 4 in Ormond Beach, Fla. Mr. McLimont was active in building electric railways in many cities in both North and South America, as well as in managing the Winnipeg Electric Co. which he took over in 1917. His education was obtained at Normal School in Ottawa, and he began his business career with the Canadian Bell Telephone Co. In 1903 he became general manager of Dubuque Light and Traction Co., Dubuque, Iowa, and subsequently entered the foreign service department of General Electric. Later he became electrical and operating engineer for the Public Service Commission, first district of N. Y., vice president and general manager of the San Francisco-Oakland Terminal Railways, Oakland, Calif., and vice-president and general manager of Georgia Power Co.

Reed W. Cady, 70, bridge engineer, died July 10 in Penn Yan, N. Y. Mr. Cady was chief engineer in the construction of the Peace Bridge linking the United States and Canada at Buffalo. He retired in 1935, was a graduate of Syracuse Uniyersity.

Frank J. Feeney, 55, civilian procurement officer for the Army Engineers in Chicago, died July 11.

Kermode Frederick Gill, 85, president of John Gill & Sons Co., a Cleveland construction firm, died July 12. His firm built the Cleveland Union Terminal, the Federal Reserve Bank, the Hanna Building, the Bukley Building, University Hospitals, Wade Park Manor and the Masonic Auditorium—all of Cleveland: also the Missouri State Capitol in Jefferson, and the Post Office in Washington, D. C.

Charles Hackler, 80, a retired contractor, died July 11 in Dallas, Tex. Among the buildings in his home city on which he worked were the Medical Arts Building, the Santa Fe building and the Buckner Orphans Home.

George M. Hamlin, 100, professor-emeritus, University of Maine, died July 17 at his home in Orono. He began his career at the University immediately on graduating in 1873 as professor of drawing and field engineering. He later served as professor of civil engineering for 18 years. In 1921, the University made him an honorary doctor of laws.

Haven C. Kelly, 72, former superintendent of way and structures of the Chicago Transit Authority and predecessor companies, died July 10 in Del Mar, Calif. Mr. Kelly began his career in 1909 as a track construction engineer for the Chicago City Railway Co. He was a member of the Western Society of Engineers and was active in the American Transit Association. He retired from the transit authority in 1948.

John James MacLean, 75, civil engineer, died July 12 at Halifax, N. S. Mr. MacLean, who enlisted in the Canadian Engineers for overseas action in World War I, and won his commission, was in highway construction work after the war. He then became superintendent of lights for the marine division of the Department of Transport, based at Halifax. He retired several years ago.

Michael Sawicki, 60, building contractor, died at Elizabeth, N. J., July 12.

Edward L. Kear, 49, contractor, died at his Yonkers home July 15. Mr. Kear graduated from Pratt Institute, Brooklyn, also held a degree from Columbia. He was president of his own firm at 369 Lexington Ave., N. Y. C.

Cyrus P. Mason, 70, formerly of the engineering department of the Union Pacific Railroad in Omaha, died in that city July 6. Mr. Mason was a graduate and former football star of the University of Nebraska.

"Caterpillar" Diesel Tractors develop

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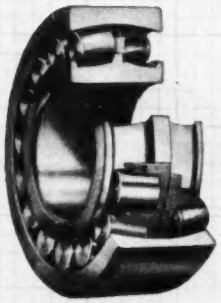
. . . through Torrington Bearings



In the constant mesh transmissions of "Caterpillar" D6, D7 and D8 Tractors, Torrington Spherical Roller Bearings are used to provide larger load capacity and smoother flow of power from the engine to the tracks.

On the upper transmission shafts of the D6, D7 and D8, and on the pinion shaft of the D8, these self-aligning bearings automatically compensate for possible shaft deflections—binding stresses cannot develop.

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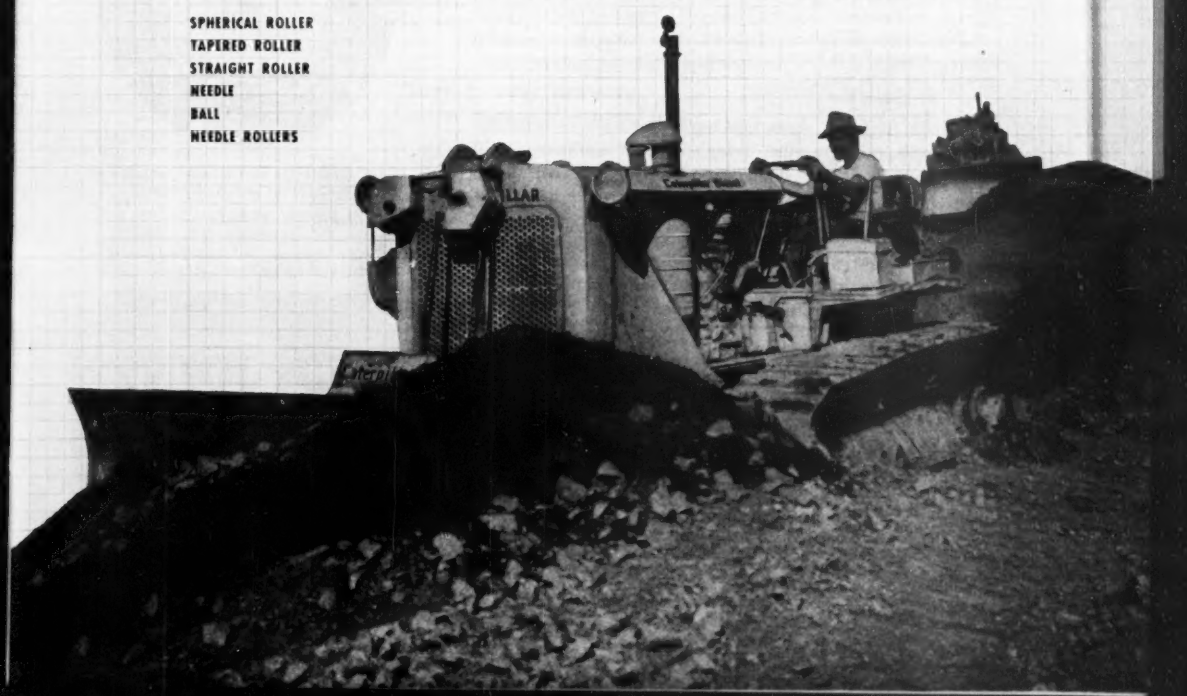

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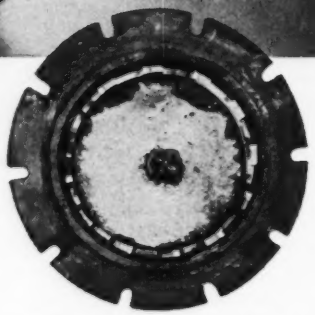
Lock Joint Pressure Pipe of any design may be tapped easily and economically for the purpose of establishing either large connections or small service outlets. With the aid of a few simple instructions, any experienced service crew can apply the modern tapping technique which permits the making of connections in concrete pressure pipe while the line continues to operate under pressure.

Although, for many years, taps have been made successfully in concrete pressure pipe, today's efficient equipment and modern methods now make it possible to tap Lock Joint Concrete Pressure Pipe with even greater economy of time, money and effort, and without sacrificing strength.

At your request we would be glad to send you our booklet outlining the simple steps required in making a pressure tap in Lock Joint Concrete Pressure Pipe.



LARGE PHOTO: Tapping a 16" outlet in a 36" pipe at Wayne County, Michigan.

SMALL PHOTO: The pilot drill of the tapping machine withdraws the concrete core, making a clean cut, and leaving no obstruction within the pipe line.

Lock Joint Pipe Company for over forty years has specialized exclusively in the manufacture of reinforced concrete pipe for water supply and transmission mains as well as for sewers, culverts and subaqueous installations.

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Reinforced Concrete
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LABOR

Issue construction wage-salary order

A special regulation covering the control of wages and salaries of on-site mechanics and laborers has been adopted by the Construction Industry Stabilization Commission and approved by the Wage Stabilization Board.

CISC Regulation No. 1 adheres to the principle that construction wages should be stabilized on an area basis, as suggested by WSB in its Regulation No. 12 creating the construction commission.

The regulation:

(1) Specifies that, for the present, five WSB regulations will not apply in the construction industry; (2) explains what rates contractors may pay without the necessity of seeking government approval and (3) tells how approval may be sought for rates which require advance approval.

WSB regulations which will not apply in construction are: Nos. 5 (individual increases based on merit, promotion, etc.); 6 (the 10% catch-up formula); 8 (cost-of-living escalators); 9 (new plants) and 10 (tandem increases).

• **OK certain rates**—The regulation gives prior approval—a contractor may pay them without seeking the government's ok—to the following rates:

Rates predetermined by the Secretary of Labor. This applies to rates on federal work subject to these laws: Bacon-Davis, National Housing, Federal Airport, Housing Act of 1949, and School Survey and Construction Act of 1950.

Approved area rates. These are rates approved by CISC (the commission) and published in the federal register as applicable specific job classifications on specific type of construction in an area. Exception: A contractor who raises his rate to the area rate, then reduces it, may not again increase the rate without first getting CISC approval.

Where no approved rates exist. A contractor may pay the legal rates being paid under union contract in the area. If there is no union contract, he may pay the prevailing legal rates in the area.

Travel. You can pay actual travel time at the authorized rate, and for actual travel expense, when the employee has to report at your shop or at any other particular site and later in the day is required to travel to a different working site.

Premium pay. Conditions under which you may pay travel expenses, travel time, subsistence, premium pay for work outside the regular workday or workweek, vacation allowances, holiday pay or make contributions for welfare benefits, insurance, pensions or annuities: (1) If the payments are in accordance with an established area practice; or (2) if the practice is approved by CISC as an area practice; or (3) if the contractor had previously personally established the practice, without violating wage stabilization.

Rates above area rates. If you are paying rates above the approved area rates—and they do not violate wage stabilization—you may continue to pay those higher rates until completion of the project or until expiration of the construction contract under which the work is being done, whichever comes first. After that, you may not pay above the area rate.

• **Getting revisions**—Applications for the establishment or revision of an area rate or rates should be filed with the Construction Industry Stabilization Commission, U. S. Department of Labor, Washington 25, D. C., by any interested party in one of the following ways:

(1) Where the area practice has been to fix a rate by collective bargaining, the application should be filed by the union or (AFL Building Trades Dept.) and the contractors or association who engage in the bargaining.

(2) In areas where a union customarily sets the rate, without bargaining, the union may file an application.

(Continued on page 71)

Seek to ease growing labor manpower problems

Top-level mobilization planners are making every effort to ease a growing manpower shortage through voluntary methods, without resorting to a labor draft.

As a result, say Washington observers, you can expect policy pronouncements that will be intended to:

1. Give more consideration to an area's manpower situation in awarding government contracts and in permitting construction and expansion of plants;
2. Put apprentices on the same basis as students in regard to deferments;
3. Permit above-ceiling wage increases where necessary to supply manpower for critical defense work.

Chief reliance for correcting difficult manpower situations through voluntary cooperation of all concerned will be placed on regional and area labor-management committees.

PRESSURE TREATMENT PAYS

• Wood exposed to moisture and air at normal temperatures *always* faces the hazard of decay—unless treated. Since a pressure treatment, selected according to the proposed use, multiplies wood service life many times, it's highly profitable. Write for Bulletin SW4 on pressure treatment.

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CORE BORINGS for Foundations, Dams, Bridges and all Heavy Structures
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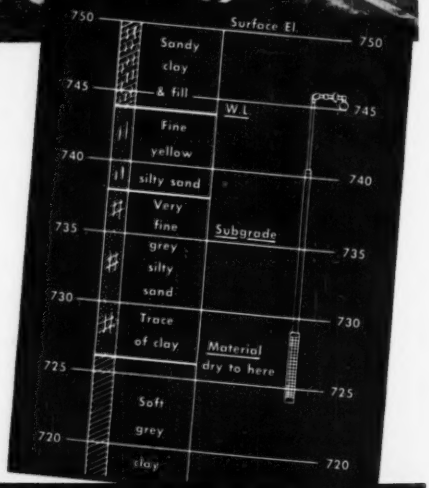
It takes MORETRENCH to dewater soil as *"fine as flour"*

Test Block Basement Area for Motor Assembly Plant — Michigan
Contractor: J. A. Utley Co., Royal Oak, Michigan



Previous attempts to wellpoint this unusually fine material were unsuccessful, but 8½ feet of water quietly disappeared when a Moretrench Wellpoint System was installed.

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Labor . . .

(4) Where it is customary for a contractor or group of contractors to fix rates without bargaining, the contractor or the group may file an application.

• **Getting approval**—Applications for approval of rates for a particular contractor or project may be filed:

(1) Jointly by the union (or AFL Building Trades Dept.) and contractors where rates are fixed by bargaining, or

(2) Individually by a contractor or group of contractors where there is no union.

A form—called Form 1—is being prepared for use in filing applications. Until it is ready, you may simply list the information desired in a written application. Besides rates proposed, you must list information pertaining to geographic area in which they will apply, job classifications and type of construction, effective date, rates prevailing on Jan. 15, 1950, and other pertinent data. Copies of labor agreements must be included.

After receipt of an application, CISC will notify all interested parties, who will have 18 days to present any information or arguments to CISC. Holding of an oral hearing will be discretionary with CISC.

CISC will be guided by WSB regulations, but will modify them where necessary to adapt them to construction.

• **Rates for specialists**—Contractors may not pay in one area rates approved in a different area. However, on application, CISC will approve the practice of paying specialists moved from one area to another the same rates irrespective of the area in which they are utilized, provided it is in accordance with the contractor's past custom.

Approved rates will apply only to those who join in the application and only for specific projects unless the ruling is designated as an "area-rate ruling."

CISC decisions will be final unless reconsidered within 10 days or modified by WSB on appeal.

In announcing a plan for prosecuting wage violators, WSB disclosed that most complaints of violation have been in the construction, tool and die and shipbuilding industries.

Raise for carpenters

Wages of 10,000 western Washington carpenters on construction jobs were increased 12 cents an hour under a contract between the Brotherhood of Carpenters and Joiners and contractors. Pay differential for foremen was increased, other fringe benefits were granted. New scale is $2.42 an hour.

only a 1 MAN JOB

DIGGING GRAVEL with a

SAUERMAN SCRAPER

With one man at the controls, a Sauerman Power Drag Scraper can reach out hundreds of feet and dig, haul and dump sand, gravel or any bulk material. Simple operation! Economical use of power!

A Sauerman machine can be installed to reach across a pit, pond, river or stockpile, or up to the top of a hill. It moves material rapidly anywhere within its wide radius. Flexible for any ground conditions. Costs only a few cents per cubic yard handled. Gas, electric or diesel.

STORY BEHIND THE PICTURE

When a Sauerman Scraper is installed for making a deep cut and delivering material to a high point, the track cable type of operation often can be used to advantage. The above picture is an example of applying this type of operation in mining a deep deposit of sand and gravel. The scraper bucket is attached to a trolley carrier which rides on a track cable. The bucket returns by gravity, from dumping point to digging point, instead of being pulled back by a cable. This reduces the time cycle for a round trip of the bucket — increases the hourly yardage moved.

Advice and Literature Freely Supplied

Write us about your material handling problems. Our catalog and suggestions on equipment will be mailed to you without obligation on your part.

Forty-One Years of Service to Industry

SAUERMAN BROS., Inc.

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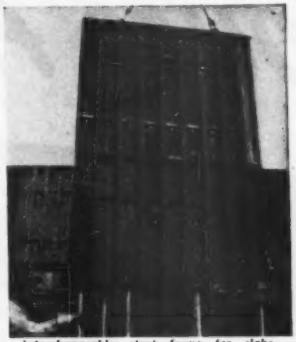
ATLAS SPEED SYSTEM OF CONCRETE FORM CONSTRUCTION

Cuts Down Slab and Wall Form Costs



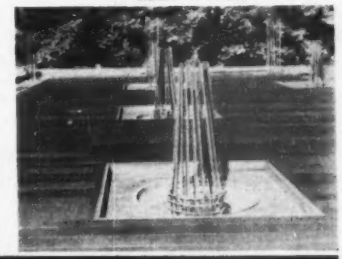
Interchangeable steel forms for slabs, walls, circular tanks, tunnels, manholes, modular structures.

CUTS DOWN Form Costs — Steel Forms give you more uses—Many times more than wood. . . . Can be reused indefinitely, year after year on job after job. . . . Many contractors report 400, 500 and more.

CUTS DOWN Labor Costs — STEEL Speed Forms go up faster. . . . Easily assembled with wedge bolts—No special fastenings used. Lightweight yet ruggedly built.

SAVES TIME—A new technique —Forms can be set up, stripped, cleaned, moved and reused in half the time of other forms.

Get the complete story. Glad to have a representative call and give you layouts, cost studies, recommendations and prices. Write Dept. *RN*.



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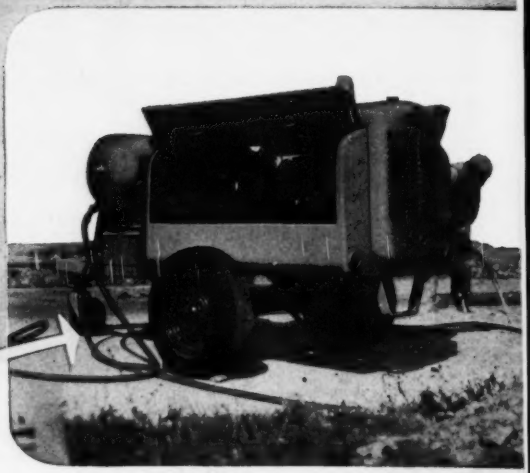
LE ROI

Note caster wheel — it saves time, makes spotting on the job easier.



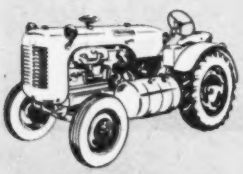
Le Roi gives you more for your MONEY!

more air power
more footage
more profits

You're Air-Equipped

Team-up with Le Roi for Lower Costs

Why LeRoi Airmasters produce more air for less money: 10 to 30% lower piston speed for less wear, longer life, lower fuel consumption . . . a heavy-duty engine designed especially for compressor service, not just an automotive unit slowed down — that's why Le Roi Airmasters stay on the job longer, produce more air for less. Sizes from 60 to 600 cfm.



Why multi-purpose Tractair saves you money: Tractair is a tractor-105 compressor unit that can be equipped with a wide variety of attachments. This single unit can do the work of specialized expensive equipment — loading, lifting, backfilling, snow-plowing, etc. — as well as breaking, drilling, digging, and tamping. Keeps your initial investment down, your job costs low.

Why LeRoi-CLEVELAND Wagon Drills cut deep-hole costs: — 4-inch bore, powerful force of blow, strong rotation, and thorough hole-cleaning action. Higher drilling speed with big bits. You can drill at any angle — put your holes where you want them for better breakage, lower costs. For shallow holes the new lightweight DR34 unit is your best bet.

Why LeRoi-CLEVELAND Breakers and Spades do more work: Plenty of wallop for speedy work in the hardest concrete or stiffest clay. Protective air-cushion in front-end assures long life. Well-balanced for easy handling. That's why operators like them — do more with them. Sizes 18 to 80 lbs.

Why LeRoi-CLEVELAND Sinkers drill more feet per shift: Strong rotation, and powerful blow from snappy valve action. Drill more inches per minute. Easy to hold, kickback is reduced. Operators are less tired, drill more feet per shift. Sizes 17 to 82 lbs., including the popular H10 and H111.

to do it Faster

...when you team up with Le Roi Airmaster Compressors and Le Roi-CLEVELAND paving breakers, clay spades, drills, and tampers

You get to the job faster—with high-speed towing made possible by Airmaster running gear and shock-absorbing tow tongue.

You get air in a hurry — with the quick start of Airmaster hot-spark magneto ignition!

You always have plenty of air when you need it, you're always ready to go — thanks to Airmaster dependability!

So if you want a good job done fast — use Le Roi Airmaster Compressors. It really pays!

For still better results and lower costs, team up with Le Roi-CLEVELAND air tools. They have a valve action that keeps air consumption to a minimum so that air pressure at the tools is higher. They're built to take it, too. That's why you can count on them to break more pavement, dig more clay, drill more rock, tamp more fill.

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CONSTRUCTION BUSINESS

Contract awards climb higher for July

Still under the spur of defense-needed heavy industrial expansion, contracts awarded for engineering construction climbed to a further high of $1,378,640,000 for the month of July, according to ENGINEERING NEWS-RECORD reports.

The awards brought total contracts awarded during the first seven months of 1951 to $8,661,569,000—an increase of 27% over the $6,850,204,000 awarded in the first seven months of 1950. The July, 1951, total was $203.5 million above the awards for July, 1950; and $351.5 million above awards for June, 1951.

• **Industrial leads**—Biggest factor, as it has been for a greater part of the year (ENR July 26, p. 75) was private industrial construction despite a comparatively slight drop from awards for this purpose during June of this year. During July, contracts totalling $194.5 million were awarded in this category, to bring the total for the year to date to $2,569 million, an advance of 274% over the same period of 1950. However, the July awards were $51.8 million under the total for June, 1951.

A strong second for the month and for the seven-month period was public residential building. With awards totaling $187 million for July, this category was $89.1 million higher than awards for June; and with a total of $516.9 million for the seven months, it is up 236% over 1950.

Other types of public buildings were also on the rise during July, registering awards for the month of $281.3 million, for a seven month total of $1,393 million—up 44% over 1950.

Third largest gain (compared to 1950) was in Public Unclassified, where, with a total of $448 million contracts awarded in July, the seven-month total for 1951 reached $664.2 million—up 182% over 1950.

Other gains over the seven month period, compared to 1950, were: Private bridges, up 79%; sewerage, up 24%; earthwork and waterways, up 12%; waterworks, up .04%.

• **Losers**—Again following a well-defined pattern, biggest drop-offs appeared in private housing and commercial buildings. A total of $119.3 million contracts were awarded for commercial residential work during July—a gain of $8.7 million over June. However, the seven-month total was $1,144 million, which is a drop of 47% under 1950. Other commercial construction totalled $55.5 million for July, a drop of $7.3 million under June, and 27% less than in the first seven months of 1950.

Public bridges, in the seven-month period, dropped 18% below 1950; streets and roads were down 11%; private unclassified was down 13%.

In the same seven-month period, Canada nearly doubled its 1950 awards, with the total for the period going to $667.5 million, compared to $357.7 for 1950.

AGC seeks higher allowance for equipment replacement

Speaking for its contractor-members, the Associated General Contractors last week asked the Senate Finance Committee for larger replacement cost allowances for equipment, in any new tax measure.

AGC representatives said the request is made because of the increasing appreciation of construction machinery, which pushes replacement prices much higher than allowed for under existing systems of accounting. Basically, AGC has asked for a replacement allowance equal to the amount of the replacement price differential.

G. C. Koss, speaking for AGC, told Senators that a 1945 tractor may have cost $10,000, but now costs $19,400. The differential is nearly twice the amount that is provided by ordinary straight-line depreciation.

With this in view, AGC asked Congress for a three-point program:

"To permit the contractor to treat as a net operating loss (subject to carry-back and carry over provisions of Section 122b of the Internal Revenue Code) an amount representing the excess of the replacement cost over the original cost; permit a general contractor a carry-back and carry-forward of all unused depreciation allowances on equipment; to provide that the tax shall not apply to use of motor vehicles by contractors in the movement of earth, rock or other excavated materials within the boundaries of or incidental to a construction project" (Under Section 3475 of the

ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—JULY, 1951

Engineering News-Record *reports continental U. S. construction projects of the following minimum costs — Waterworks, excavation, drainage and irrigation,* $34,000; *other public works,* $60,000; *industrial buildings,* $82,000; *other buildings,* $300,000

Four Weeks — Thousands of Dollars (000 Omitted)

	July, 1951						U. S. Cumulative Seven Months		% Change	Canada July,
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1951	1950	'50 to '51	1951
Public Works											
Waterworks	1,491	4,168	2,264	2,356	2,775	2,859	**15,913**	**131,366**	131,315	+.04	2,470
Sewerage	465	3,145	1,886	4,276	5,520	3,575	**18,867**	**183,316**	148,272	+24	831
Bridges	9,069	8,792	4,102	1,088	4,141	7,648	**34,840**	**180,770**	221,167	−18	2,123
Earthwork and waterways	464	3,564	4,213	4,265	29,298	14,878	**56,682**	**329,985**	295,396	+12	1,459
Streets and roads	3,810	16,790	33,161	19,132	35,488	19,641	**128,022**	**574,692**	755,266	−11	4,259
Public buildings, residential	37,541	38,350	39,098	8,609	28,626	14,817	**187,041**	**516,944**	153,902	+236	9,743
Other public buildings	71,796	56,171	31,438	36,554	28,733	56,607	**281,299**	**1,393,043**	966,063	+44	17,225
Unclassified	10,588	14,184	88,057	9,240	60,558	76,346	**258,973**	**664,212**	235,176	+182	2,025
Total public	**135,224**	**145,164**	**224,219**	**85,520**	**195,139**	**196,371**	**981,637**	**4,074,328**	**2,906,557**	**+40**	**40,135**
Federal government (included in above classifications)	62,796	32,530	117,930	14,650	108,315	111,922	**448,143**	**1,602,243**	831,468	+93	16,600
Private											
Bridges	.....	.....	164	.....	3,475	.....	**3,639**	**11,077**	6,186	+79	.....
Industrial buildings	14,549	13,962	39,770	99,947	15,789	10,489	**194,506**	**2,569,008**	686,978	+274	109,959
Com'l. buildings, residential	2,650	58,636	6,258	28,104	11,305	12,325	**119,278**	**1,144,083**	2,159,676	−47	5,504
Other commercial buildings	12,721	7,100	5,638	10,324	9,638	10,132	**55,553**	**402,668**	553,848	−27	1,613
Unclassified	.....	1,310	6,097	3,130	13,080	410	**24,027**	**460,405**	526,959	−13	.....
Total private	**29,920**	**81,008**	**57,927**	**141,505**	**53,287**	**33,356**	**397,003**	**4,587,241**	**3,933,647**	**+17**	**117,076**
Total Engineering Construction:											
July, 1951 — 4 weeks	**165,144**	**226,172**	**282,146**	**227,025**	**248,426**	**229,727**	**1,378,640**	.....	.....	....	**157,211**
June, 1951 — 4 weeks	47,077	169,305	226,866	203,889	235,377	144,553	**1,027,087**	.....	.....	....	104,923
July, 1950 — 4 weeks	45,637	220,873	170,950	234,263	348,080	154,735	**1,175,138**	.....	.....	....	42,735
Seven Months — 1951	**483,588**	**1,556,136**	**1,856,441**	**1,569,233**	**2,069,185**	**1,206,986**	.....	**8,661,569**	.....	....	**667,525**
Seven Months — 1950	331,058	1,681,081	990,172	1,010,369	1,652,994	1,108,530	.....	.....	6,840,204	+27	357,789
% Change '50 to '51	+22	−7	+86	+55	+25	+3	.....	.....	.....	....	+87

Internal Revenue Code, a contractor may at present move earth by bulldozer without tax, but must pay tax if he uses a truck).

$1.5 million of equipment goes on auction block

Construction equipment valued at more than $1.5 million and reportedly little used will go on the auction block Aug. 7; at Manassas, Va. (near Washington, D. C.) at 10-a.m.

The equipment was purchased originally by the Smith Contracting Corp., which recently completed a contract on a 200-mile stretch of a 30 in. natural gas pipeline running from Texas fields to New Jersey. Most of the equipment was purchased in 1950, used on the work, overhauled, and then put up for sale as surplus to the contractor's present construction operations.

Tractors, trucks, cranes, wagon drills, welding machines, ditchers, and miscellaneous items of material and equipment.

N. Y. to try multi-site public housing project

In announcing its consideration of plans for the $16 million Vladek Houses Extension project, the New York City Housing Authority said Thursday it would attempt with this project a "new kind of public housing project"—a multi-site housing development.

The Vladek Houses Extension is planned as an 1,100-apartment federally-aided job, but will entail construction on three separate sites—two of them adjacent to the existing Vladek Houses, and one several blocks away. In all, ten buildings of about 14 stories in height will be built.

Philip J. Cruise, NYHA chairman, cited two principal reasons for the multi-site program: The increasing difficulty of assembling large plots in blighted areas for housing developments; and the hope that structures in the areas that are worth preserving (such as newer housing, mercantile establishments, public buildings) can be preserved and integrated with the new developments.

"If the plan proves successful," Mr. Cruise commented, "it will also permit the authority to extend its site selection to blighted areas that do not require full clearance, but that can be partially cleared. An added advantage will be a more diversified housing pattern.

Major problem, the authority said, is expected to be maintenance of the scattered units.

Business briefs . . .

• **Plan airbase**—Plans for a new $62 million aircraft and equipment maintenance depot in Lancaster County (Harrisburg) Penna., have been disclosed in an Air Force announcement. The new facility (not yet definitely located), is to augment the existing Olmsted Air Force Base at Middletown. Preliminary sketches disclose only one runway, 10,000 ft long, and a group of hangars, warehouses, machine shops, housing for personnel.

• **Seaway goes on**—The House Public Works Committee, by a narrow 14-13 margin, has voted to continue consideration of two bills to authorize the $500 million project. Opponents, seeking to take advantage of the current situation which will see two committee members who favor the measure resigning their posts shortly, sought to force a vote. Administration Congressmen, however, managed to hold their slight majority, pending a more favorable balance of power.

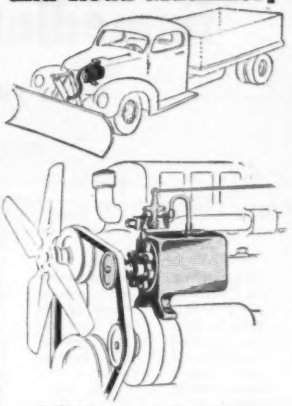
• **Public housing down**—Washington observers think that the 42,300 public housing units started in June (ENR July 19, p. 101) are the result of a scare, and won't happen again. They look now for a pace of about 3,000 starts for the rest of the year, on the basis of Congressional determination to limit public housing.

• **Canadian aluminum plant**—After four years of investigation, the Aluminum Company of Canada has definitely decided to go ahead with its $160 million first-stage development of a new plant and townsite at Kitimat, in British Columbia. Included will be the plant itself, a hydro development to supply power, and partial development of a townsite.

• **Europe exports steel**—Actual shipments of European-produced steel to the United States are now proceeding at a rate of 2,500,000 tons yearly, NPA reports. Although small by comparison to domestic production, the shipments have increased as a result of heavy demands on U. S. production. Imports come principally from France, Belgium, Luxembourg and West Germany.

• **Calif. road costs up**—The 15-month period ending June 30, 1951, saw the most rapid rise since 1940 in highway construction costs in California, the State Highway Department reports. The latest California Highway Construction Cost Index is at 238.3 (1940 = 100), which is a 22.3% rise since Jan. 1, 1951, and 48.9% rise in 15 months.

POWER HYDRAULICS for Snow Plows and Road Machinery



- Clutch operated (Optional)
- Thousands in use
- Fan Belt or Electrically Driven
- Fit All Trucks

Specify Monarch controls when ordering snow plows.

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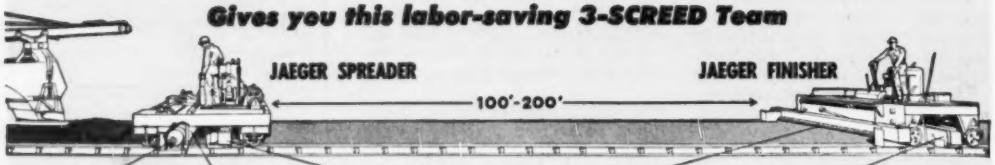

Re-mixing spreader screw: Reworks, compacts and spreads material evenly from form to form.

Initial strike-off to approximate grade (all that any other spreader can accomplish.)

No. 1 — Metering screed Makes precision strike-off with 12" oscillating shoe. Corrects any excess or deficiency left by initial strike-off. Saves cost of shovelers for carry-back and for costlier back-tracking with the paver.

No. 2—Transverse Screed: Works with just the right roll of material as "metered" by the Spreader. No piles to buck. Uniform compaction at all times.

No. 3 — Diagonal Screed: Pivots to any angle needed to carry material up-hill on pitched slab or super-elevated curves, compacts it solidly against higher form. Corrects any irregularities left by transverse screed because it meets material at different point. Also finishes stiff mixes without tearing.

Spreader screw and strike-off do the heavy work: Powerful screw easily knocks down biggest piles, remixes and densifies the material, spreads it evenly from form to form. Adjustable plate then makes initial strike-off.

Added metering screed then makes precision strike-off: Oscillating 12" screed (*the screed that's missing from all other spreaders*) meters just the right amount of material needed for final finishing. No later carry-back, no high spots. Finisher can safely wait until surface is properly conditioned.

Double screed finisher (using diagonal screed as needed) completes finish: Note the small, accurately metered roll of material always ahead of the finisher. Means always uniform compaction under the screeds; easier, better finishing. Has eliminated second finisher where required in several States. On pitched slab and super-elevated curves Jaeger diagonal rear screed finishes perfectly to the higher form.

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Construction business . . .

UNIT PRICES BID BY CONTRACTORS

Storm drain, Los Angeles

Contractors bidding on the work for the Aliso and Alameda Streets Drainage System, both state and city portions, were allowed the choice of alternate methods of construction (wholly or partially in tunnel) and of constructing either monolithic arch cast in place storm drain or precast reinforced concrete pipe storm drain in each method. Among four firms bidding, only the low bidder presented bids on the work under all four conditions.

The Board of Public Works of Los Angeles, Calif., received bids on June 13. G. E. Kerns of Long Beach, Calif., low bidder, was 8.5% below the engineer's estimate and 24% below the next to low bid while a difference of 43% exists between low and high bids. City Engineer Lloyd Aldrich is engineer on the job.

Work consists of: tunneling in sand, gravel and rock at a depth of 35′ requiring a tunnel liner and adequate drainage; trenching at a depth of 24′ in sand and gravel with tight sheeting in a limited working area or tunnel at the city's option. Measurement of the job is: totally in tunnel–12′ conduit, 3,131′ in length; in open trench or tunnel–9′6″ conduit, 1,325′ in length.

The city requires the contractor to replace lawns, trees, shrubs, etc. or private property.

Wage rates prevailing in the area are to be paid on the job. The city will exact a penalty of $10 per day for each workman paid less than the general scale. Prevailing wages in the Los Angeles area are: common labor, $1.75; hoisting engineer, $2.30; truck drivers, $1.75-$2.18; concrete mixer operator, $2.18-$2.40.

All items may be constructed in a tunnel or open trench at the option of the contractor except where stated otherwise. Concrete to be used is Class F (6.4 sacks of cement per cu yd) except where Classes C (4.2 sacks per cu yd) and D (9 sacks per cu yd) are called for. In the event the contractor decides to construct the "horseshoe" rather than the "semi-elliptical" type arch in the storm drain, he may use steel forms owned by the city free of charge.

Bidders included:

1 G. E. Kerns, Long Beach, Calif. C $1,397,456.00
2 Artukovich Bros. Inc., Paramount, Calif. 1,836,405.50
4 Kemper Constr. Co., Inc.; Rhoades-Shofner Constr. Co.; & Grafe-Callahan Constr. Co., all of Los Angeles 2,440,019.25
Engineer's estimate 1,527,189.70
States's portion (Unit A—Monolithic Arch Storm Drain partially in tunnel)

Items	Quantity	Unit prices 1	C	2
Outlet structure ls	.....	$7,500		$12,200
Mono arch storm drain compl in pl in tunnel, Sect A lf	238	320.00		385.00
Sect B lf	2,893	293.00		380.00
Sect D (portion in tun'l) lf	556	205.00		360.00
Reinf conc pipe drain, 72″ lf	28	200.00		100.00
RCP drain lat'l, 30″ lf	9	40.00		25.00
Conc pipe drn, lat'l, 15″ lf	21	10.00		20.00
12″ lf	6	10.00		18.00
Concrete:				
Cl D, reinf for 12″ conc pipe lf	6	10.00		3.00
Cl C for support walls cy	1	50.00		60.00
Reinf concrete transition structure, sta 1+33.60 to sta 1+43.60, in tunnel ls	.....	3,000		2,700
Manhole ea	3	1,000		500.00
Junct struct D in tunnel ea	1	500.00		600.00
Junct chamber No. 3 ea	1	500.00		300.00
Junct struct, at sta 32+85.34 ea	1	8,000		6,000
At sta 0+14.15 ea	1	5,000		4,500
Special junct structure as per detail O ea	1	500.00		350.00
Catch basin, No. 39 ea	1	500.00		200.00
No. 40 ea	1	500.00		1,500
Conc pavm 8″ thick for local depression sf	164	1.00		1.50
Asph conc pavm T	3	10.00		20.00
Conc gutter 8″ thick sf	4	2.00		2.00
Resurfacing, Cl AC-8 sf	1,440	0.50		1.50
Sidewalk sf	7,810	0.30		0.60
Heavy curb lf	910	2.00		2.00
Conc gutter sf	930	0.50		1.25
Removal & reset of any interfering portions of electrolier light system downstream from sta 38+62.58 ls	.....	1,700		5,000
Removal & reconstr of interf existing catch basins & connecting pipe dwnstrm from sta 38+62.58 ls	.....	100.00		5,000
Cast iron pipe sewer, 16″ Cl 250, in tun'l lf	16	30.00		20.00
City's portion (Unit E—Monolithic Arch Storm Drain, tunnel or open cut at contractor's option)				
Items	Quantity	Unit prices 1	C	2
Mono arch storm drain as per Sect D lf	769	220.00		330.00
Storm drain lateral as per Sect E-rr, includ track support lf	42	200.00		300.00
Sect E lf	32	200.00		290.00
Sect F lf	120	150.00		150.00
Reinf conc pipe drain, 42″ lat'l, case III laying lf	18	100.00		50.00
36″ lf	25	75.00		45.00
Manhole BX ea	1	2,000		500.00
Structural excav including all necessary removal, haulawy, disposal support & resurf cy	2,250	10.00		2.00
Structural backfl in place compacted cy	925	5.00		5.00
Struct concrete in place cy	485	75.00		50.00
Reinf steel in place lb	53,600	0.15		0.20
Misc steel in place excluding catch basin in grates & manhole frame & covers lb	12,000	0.60		1.00
Grating for catch basin ea	14	100.00		100.00
Manhole frame & cover ea	3	100.00		60.00
Conc pavm 8″ thick for local depressions sf	1,711	1.00		1.50
Conc gutter 8″ thick sf	44	1.00		2.00
Asph conc pavm T	36	10.00		20.00
Vit clay pipe sewer, 10″ standard strgth, in tunnel, + conc reinforcement lf	59	40.00		20.00
Vit clay pipe sewer, 10″ extra strgth lf	95	20.00		20.00
VCP sewer, 10″ stand strgth, + cemnt reinf lf	71	20.00		20.00
Reconstr & support 8″ stand strgth vit clay house connection sewer at sta 0+84 lf	13	20.00		20.00
Manhole B ea	2	1,000		600.00
Standard drop manhole ea	1	1,000		650.00

(Continued on following page)

FOR LONG LASTING, HEAVY DUTY
DRIVEWAYS
TRUCKING AISLES
INDUSTRIAL FLOORS
AND THE LIKE

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FLOOR SURFACE REINFORCEMENT
SHOCK-PROOF
WEAR-PROOF
CRACK-PROOF

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(Continued from preceding page)

Items	Quantity	Unit prices 1 C	2
Lamphole ..... ea	1	500.00	400.00
Remodeling manhole, sta 0+00 to junct chamber ..... ea	1	200.00	100.00
Resurfacing, Cl AC-8 ..... sf	6,180	0.60	1.00
Conc gutter ..... sf	1,266	1.00	1.25
Heavy curb ..... lf	633	2.00	2.00
Sidewalk ..... sf	1,515	0.50	0.60
Remove & reset interfering electroliers & appurtenance upstream from sta 38+62.58 ..... ls	.....	3,000	7,500
Remove & reconstr interfering portion of catch basin & connecting pipe upstream from sta 38+62.58 ..... ls	.....	3,000	2,600
Conc for support walls & pipe seals, Cl C ..cy	1	50.00	60.00
24" cast iron pipe sewer, Cl 250, complete in place + removal of 16 lf of clay pipe sewer ..... lf	16	100.00	100.00
Remove & abandon interfering portion of sanitary sewer facilities between sta 0+84 and 2+36.89 ..ls	.....	500.00	3,500

Highway, concrete bridge, Elko County, Nevada

The Directors of the Department of Highways, Carson City, Nevada, awarded the contract for 15 miles of highway in Elko County, Nev., to a low bid of $315,106 July 5, 1951. Four bids, within a range of 23% from low to high, were presented. Next to low bid was within 1.3% of the low.

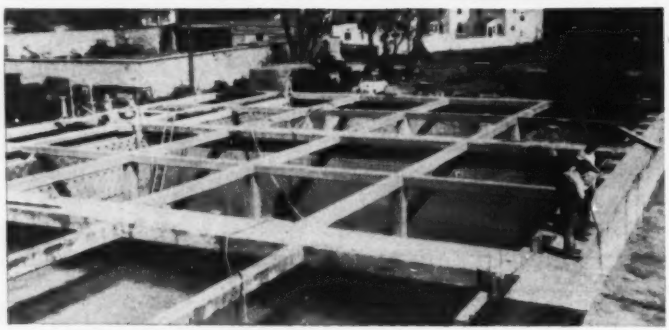
The project consists of grading the 24-foot roadbed, installing drainage structures, placing gravel base and gravel surface courses and constructing a reinforced concrete bridge. V. W. Clyde, resident engineer of the Dept. of Highways, is engineer.

Work must be completed within 180 days.

Bidders were:

1 Isbell Constr. Co., Reno, Nev., (Contract)	$315,106.55
2 Wells Cargo, Inc., Reno	319,227.75
4 Foster & McHarg, Riverside, Calif.	409,873.00

Items	Quantity	Unit prices 1 C	2
Signs ..... ls	.....	$1,000	$1,000
Clearing ..... ls	.....	5,000	4,000
Remove fence ..... lf	29,260	0.08	0.10
Culvert pipe ..... lf	549	2.00	1.50
Headwalls ..... ea	7	15.00	10.00
Struct & obstr ..... ls	.....	1,500	1,800
Excav., roadway ..... cy	271,080	0.25	0.23
Drainage ..... cy	1,820	0.50	0.50
V type ditches ..... sta	484	4.00	5.00
Overhaul ..... yd sta	403,350	0.015	0.015
Overhaul ..... yd mi	20,920	0.20	0.15
Structure, excav ..... cy	2,040	1.50	3.00
Backfill ..... cy	3,170	0.75	1.50
Water ..... M gal	7,802	1.50	1.50
Furn water equip ..... ls	.....	2,500	1,000
Tamping roller ..... ft hr	15,610	0.50	0.45
Grav. base, type 1 ..... T	110,270	0.50	0.55
Gravel surface ..... T	48,600	0.75	0.65
Concr, spec, Cl A ..... cy	570	65.00	74.00
Reinf steel ..... lb	77,100	0.12	0.14
Mesh reinforcement ..... sy	560	0.50	0.60
Struct steel rail, type B .lf	176	8.00	10.00
Redwood ..... Mbm	1.07	500.00	300.00
Corr met pipe, 8" ..... lf	60	1.85	2.30
18" ..... lf	1,008	3.00	3.40
24" ..... lf	3,094	4.50	4.80
30" ..... lf	256	5.50	5.80
36" ..... lf	534	9.50	8.80
42" ..... lf	84	11.00	10.30
48" ..... lf	116	13.00	13.00
Relay culv pipe ..... lf	260	2.00	1.50
Perforated underdrain, 8" ..... lf	100	2.80	2.20
Grouted handlaid riprap ..... cy	145	25.00	25.00
Constr fence, type B-4B .lf	8,120	0.30	0.35
Reconstr fence ..... lf	26,350	0.20	0.25
16' metal gate ..... ea	1	85.00	50.00
Right-of-way markers ..en	176	8.00	5.00
Concrete slope pave ..... cy	62	35.00	45.00
24' special cattle guards ea	5	1,500	1,270
Stripping deposits ..... cy	31,810	0.20	0.15



CEMENT GUN COMPANY RELINES SETTLING BASINS WITH GUNITE

Photograph above shows three of four Settling Basins at a Virginia City's Municipal Water Works during the course of being relined with "Gunite". The concrete in this structure had disintegrated considerably, due to chemical and frost action.

Cement Gun Company crews replaced a "Gunite" lining on the floor and on the exterior walls of the basins and, in addition, grouted under the floor of all four basins to solidify the structure.

Additional reinforcing of steel mesh and "Gunite" was added at all corners where failure was indicated by leakage and the presence of large cracks.

This is just one of many typical "Gunite" repair jobs which have been done. For information on "your job" and description of many other "Gunite" jobs, performed by us, send details and request catalog A-2400—on your letterhead, please.

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GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

Mass., Boston—PARK—B.A. 8/8—City, City Hall, swimming pool and locker rooms, North End Park, Commercial St. Plans deposit $50 refundable.

† **Me., Winter Harbor**—RADIO OPERATING BLDG.—B.A. 8/14—Dist. Pub. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., radio operating bldg. addn., U. S. Naval Radio Station, NOY 24926, Spec. 27035. Plans deposit $20.

† **Mass., Watertown**—BOILER FACILITIES—B.A. on or about 8/15—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, replacement of boiler facilities Bldg. 60, Watertown Arsenal, Eng. 19-016-52-2.

BIDS ASKED—BUILDINGS

Mass., Boston—GARAGE—B.A. 8/16—City, City Hall Annex, Unit 2, off street parking structure, cage garage, Winthrop Square. Plans deposit $100. CD 9/5/50.

BIDS ASKED—HEAVY CONSTRUCTION

R. I., Bristol—B.A. 8/7—Town, Sewer Comn., Hope St., sewerage works, $60,000. Plans deposit $20. Fay Spofford & Thorndike, 111 Beacon St., Boston, engrs. CD 2/15/46.

R. I., Bristol—B.A. 8/7—Town Sewer Constr. Comn., pumping station addn. and two pumps, $340,000. Fay Spofford & Thorndike, 111 Beacon St., Boston, Mass., engrs. CD 4/10/47.

Conn., Hartford—S.A. 8/16—Bd. Contract and Supply, The Metropolitan District, 115 Broad St., Hartford, Conn., Contract 209A-Proposal masonry filters and regulator house at filtration plant Town of West Hartford. Plans deposit $20. Bids 7/5 rejected. L.B. $823,903. CD 10/17/47. adv. ENR 7/26.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MASSACHUSETTS—Commonwealth of Mass., Dpt. Pub. Wks., 100 Nashua St., Boston.

Bayer & Mingolla Constr. Co., Inc., 90 Lincoln St., Worcester, Mass. LB **$881,960.** est. $936,663. reconstr. section of state hy., Auburn and Worcester. Bids July 17. CD 7/5.

MASSACHUSETTS—Commonwealth of Mass., Dpt. Pub. Wks., 100 Nashua St., Boston.

Sacco Constr. Co., Suffolk St., South Bellingham, Mass. LB **$101,477.** est. $94,367. hy. and bridge work, Hopedale.

Charles Capone Constr. Co., Inc., 44 Wellsmere Rd., Roslindale, Mass. LB **$69,683.** est. $57,090. hy. reconstr., Boston. Bids July 3. CD 6/22.

SOON LETS CONTRACT—BUILDINGS

Conn., Milford—TRUCK TERMINAL, etc.—Middle Atlantic Transportation Co., Inc., 975 W. Main St., New Britain, Conn., soon lets contract 1 story 95x100 ft., brick, steel, concrete truck terminal and office, New Haven Ave., $90,000. Leo F. Caproni, 1221 Chapel St., New Haven, Conn., archt.

BUILDINGS

LOW BIDS AND CONTRACTS

Francis Harvey & Sons, Inc., 141 Dewey St., Worcester, Mass. CA **$82,000.** LABORATORY AND OFFICE, Neponset St., WORCESTER, MASS. Astra Pharmaceutical Products, Inc., 332 Main St., Worcester, Mass. CD 9/26.

Salvador Nunes, Harbor View Ave., Bristol, R. I., CA. $300,000. SCHOOL, PARISH HALL, Wood St., Bristol, R. I. St. Elizabeths Church, Hood St., Bristol, R. I. CD 11/1/50.

H. V. Collins, 7 Dyer St., Providence, R. I. CA. **$750,000.** Parochial SCHOOL, Elmwood Ave., CRANSTON, R. I. St. Mathews Roman Catholic Church, Elmwood Ave., Cranston, R. I. Bids Apr. 20. CD 4/18.

▲ **Halloran Hollen & Riva,** 1 Washington St., Providence, R. I., CA. **$1,250,000.** Generating PLANT with equip. connections, etc., WESTERLY, R. I. Narragansett Electric Co., 49 Westminster St., Providence, R. I. Bids June 21. CD 6/20.

▲† **Frouge Constr. Co.,** 74 Goodell St., Bridgeport, Conn., CA. $1,000,000. FACTORY, between Plains Rd. and Caswell St., along New Haven R. R., MILFORD, CONN. Norden Instruments Inc., 177 Broad St., Milford, Conn.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

† **Md., Aberdeen Proving Ground**—SHOP—B.A. on or about 8/7—U. S. Eng., 24 St. and Maryland Ave., P.O. Box 1715, Baltimore, Zone 3, artillery and fire control shop at Aberdeen, Harford Co., approx. 35 mi. northeast of Baltimore, Eng. 18-020-52-1. CD 11/17.

† **Md., Edgewood**—RADIOLOGICAL COLD LABORATORY—B.A. on or about 8/14—U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore, Zone 3, heating and ventilating of 15 existing laboratories in Radiological Cold Laboratory, Bldg. 716, Army Chemical Center, approx. 25 mi. northeast of Baltimore, Eng. 18-02-52-2. CD 3/1.

▲**N. Y., New York**—SCHOOL—B.A. 8/14—Bd. Educ., 49 Flatbush Ave. extens., Brooklyn, general constr., plumbing and drainage, heating and ventilating, electrical and lighting fixtures for new Junior High School 123, Bruckner Blvd. between Strafford and Morrison Aves., Bronx Boro. $2,732,200. Plans deposit $30 general constr. $9 each others.

† **Pa., Coatesville**—OPERATING SUITE, etc.—B.A. 8/14—Veterans Admin., Munitions Bldg., Wash., D. C., construct and finishing complete, alterations to Operating Suite and Air Conditioning Bldg. 1, for Veterans Admin. Hospital, Spec. No. 51145, Proj. No. 3-4107.

▲ **N. Y., New York**—HOSPITAL—B.A. About 8/20—St. Vincents Hospital, 7 Ave. and 11 St., Zone 14, 14 story hospital addn., 7 Ave. and W. 12 St. $1,200,000. Eggers & Higgins, 100 E. 42 St., Zone 17, archts. CD 9/20.

SOON LETS CONTRACT—BUILDINGS

Pa., Phila.—FREIGHT BLDG.—Carroll & Stephenson, archts., 262 S. 15 St., Phila., Pa., soon lets contract freight bldg. for Interstate Motor Freight System, 4341 Tacony St.

▲ **Pa., Phila.**—OFFICE—M. Ward Easby, Inc., engr., 1201 Chestnut St., soon lets contract office and mfg. bldg. for National Union Radio Corp., Hatboro, Pa. $6,000,000.

Pa., Phoenixville—MANUFACTURING—Widdicombe Engr. Co., engr., 117 S. 17 St., Phila., soon lets contract mfg. bldg. addn. for Weiland Packing Co., Inc., 551 W. Bridge St.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, cancelled bids to have been opened July 25, landscaping 7.96 mi. Marcy Hill-Trenton, S. H. 931, Remsen-Boonville town Line, S. H. 5346, Boonville, Town Line-McKeever, S. H. 5248, Proj. F 752 (4); F 321 (6) and F 743 (3), FARC 51-47. Oneida Co. est. $29,000***landscaping 18.8 mi. Elba-Byron, Pts 1 and 2, S. H. 48-14, S. H. 48-13, Attica-Batavia, Pt. 1, S. H. 8022, Attica Village, Market and Main Sts., S. H. 9224, Ridge, Pts 1, 2, 3, and 4, SH 6-165-256-257, Genesee, Monroe and Wyoming Counties. Est. $18,000. CD 7/10.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

Vinton Constr. Co., 908 Gist Ave., Silver Spring, Md., LB, (a) **$165,623;** (b) **$145,826,** 7,670 lin. ft. 160 24-8 in. diam. watermains South Dakota Ave. Riggs Rd. N.E. area, WASH., D. C. Dist. Sanitary Eng., District Bldg., Wash., D. C. Bids July 17. CD 7/6.

▲ **Oxford Constr. Co.,** 2657 E. Clearfield St., Phila. Pa. Ca. Approx. **$1,250,000.** 9,000 ft. double-track siding from Pennsylvania R.R. main line into new U. S. Steel Co. plant near Morrisville, incl. 500,000 cu. yds. embankment 7 concrete spans one steel girder bridge, FALLS TWP. PA. Pennsylvania R.R., L. P. Struble, ch. engr. (Eastern Region) 30 and Market St., Phila. Pa. Awarded July 2.

John F. Miles, 1016-18 Chestnut St., Kulpmont, Pa., LB. **$64,230.** est. $60,000. sanitary sewage sys. imprvs. at Woodville State Hospital, WOODVILLE, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa., Bids July 18. CD 7/6.

BUILDINGS

LOW BIDS AND CONTRACTS

George Roman, 8 Stanton St., Trenton, N. J., CA, **$82,000.** 3500 sq. ft. WAREHOUSE, TRENTON, N. J. Tattersal Co., 309 N. Willow St., Trenton, N. J. Hankin, Stull & Backes, 212 W. State St., Trenton, N. J., archts.

Steiner Constr. Co., 2122 Maryland Ave., Baltimore 18, Md. CA **$85,000.** 17x43 masonry OFFICE and 52x52 ft. masonry STORAGE BLDG., BALTIMORE, MD. Latex & Rubber, Inc., 1075 Hull St., Baltimore, Md.

▲ **O. H. Martin,** 18 First St., Pittsburgh, Pa. LB **$1,138,000.** one hundred and twenty-five 2 story, brick concrete block HOUSING unit Proj. MD 5-1, CUMBERLAND, MD. Cumberland Housing Auth., Cumberland, Md.

▲ **Victor R. Beauchamp,** 6837 4 St. N. W., Wash., D. C. LB **$2,248,838.** 210 brick, concrete block HOUSING unit Proj. MD 6-2-3, HAGERSTOWN, MD. Hagerstown Housing Auth., Hagerstown, Md. CD 2/2.

Schriber Comtg. Co., 615 3 St. N.E., Wash., D. C. CA **$347,997.** 2 story, 155x244 ft., brick, concrete block elementary SCHOOL, Chillum, UPPER MARLBORO, MD. Prince Georges Co., Bd. Educ., Upper Marlboro, Md. Ross & Walton, 3510 Rhode Island Ave., Mt. Ranier, Md., archts.

▲ **Standard Constr. Co.,** 1010 Vermont Ave. N. W., Wash., D. C., CA, **$3,193,693,** Stanton DWELLINGS housing project 348-units, WASH., D. C. National Capitol Housing Auth, 1737 L St. N. W., Wash., D. C., Bids July 18, awarded July 20. CD 7/20, under LB.

▲ **Brookside Park Assocs., Inc.,** c/o W. Harry Dawson, Newark Del., Owner Builds, **$12,250,000.** 1,200 ranch-type HOMES and recreation and shopping center on 285-acre tract bonded by Morrow and Wilson Station Roads, South Chapel St. extension and Pennsylvania R.R. tracks, on west side S. Chapel St. extension boundary facing University of Delaware Agricultural Experiment Station, NEWARK, DEL.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

La., New Orleans—AIRPORT IMPRVS.—B.A. 8/9—Orleans Levee Dist., Civil Courts Bldg., rehabilitation and repairs to runways at New Orleans Airport. Plans deposit $15, Bedell & Nelson, 840 Union St., engrs. CD 12/29/44.

† **Tenn., Knoxville**—HANGAR, ETC.—B.A. 8/9—U. S. Eng., 303 U. S. Court House, Nashville, Zone 1, alert hangar, readiness bldg. and other bldgs. at McGhee Tyson Air Force Base, Eng. 40-058-52-3. Plans deposit $25. CD 7/19.

Tenn., Chattanooga—B.A. 8/10—State Hy. Dpt., Nashville, repairs to McCallie Street Tunnel. Approx. $300,000.

Miss., Natchez—B.A. 8/14—City, Mayor and Bd. Aldermen, City Hall, Contr. 1, WW imprvs. Plans deposit $20; Contr. 1, c.i. pipe, fittings valves, valve boxes and hydrants for use in connection with WW imprvs. Contrl., Black & Veatch, 4706 Broadway, Kansas City 2, Mo., consult. engrs.; installing 2 addnl. 400 sq. ft. filters, chemical treatment basin, aerating sys., chemical feed equip., shop, garages, etc. Plans deposit $25. Wiedeman & Singleton, P.O. Box 1878, Atlanta 1, Ga., engrs.

Miss., Natchez—B.A. 8/14—City, Mayor and Bd. Aldermen, City Hall, Contr. 1, 9 mi. 24 in. trunk and outfall sanitary sewers, 590 ft. tunnel work; Contr. 2, 8 mi. sizes up to 12 in. lateral sewers, lift station, 850 ft. 4 in. c.i. force main;

Contr. 3, 1¾ mi. 8 to 15 in. vitr. clay pipe, trunk, sanitary sewers, 16 in. c.i. pipe in conduit; Contr. 4, 11.5 mi. sizes up to 19 in. lateral sewers, 2 lift stations, 3,269 ft. 4 in. c.i. force main; Contr. 5, 8 mi. sizes up to 24 in. trunk and lateral sanitary

The POWER ADVANTAGE Story of the Model AEN Single Cylinder WISCONSIN *Air-Cooled* ENGINE

Here's more power . . . less weight . . . lower cost . . . all with no sacrifice in heavy-duty construction and serviceability in this Model AEN single-cylinder Wisconsin Engine. Features include:

1. Dependable air-cooling under all climatic and weather conditions.

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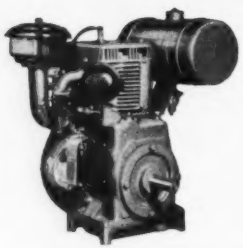
3. Rotary type high tension OUTSIDE Magneto with Impulse Coupling operates as an entirely independent unit that can be serviced or replaced in a few minutes.

4. Maximum torque at usable speeds for equipment that really has to go to work.



Model AEN 4-cycle single cylinder standard engine.

SPECIFICATIONS, MODEL AEN

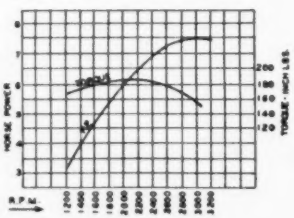
Bore	3"
Stroke	3¼"
Piston Displacement	23 cu. in.
Horsepower	5.1 H.P. at 1800 R.P.M. 6.4 H.P. at 2200 R.P.M. 7.2 H.P. at 2600 R.P.M. 7.5 H.P. at 3000 R.P.M.

WHEN ORDERING ENGINE SPECIFY SPEED DESIRED

Diameter of Valves	1-5/16" O. D.
Spark Plug size	18 mm. Metric
Fuel Tank Capacity	1.7 Gals.
Valve Location	L-Head
Piston Pin Diameter	¾" Floating Type
Conn. Rod — Steel Forging	Length 8"
Conn. Rod Bearing	1⅛" x 1¼"
Oil Required in Reservoir	3 Pts.
Cylinder Head	Aluminum, Removable
Cylinder — Crankcase	Cast Iron
Valve Seat Inserts	Nickel Chrome Molybdenum Iron
Piston	Aluminum Alloy
No. of Piston Rings	4
Main Bearings	Tapered roller of generous size
Crankshaft	Counterbalanced Heat Treated Drop Forging

Weight-Lbs.	Net	Crated
Standard Engine	110 Lbs.	135 Lbs.

Second of a series about Wisconsin Engines. For more detailed information and for the entire series, write us.



POWER CURVE AND HORSEPOWER LISTING SHOWS MAXIMUM DYNAMOMETER HORSEPOWER OF ENGINE complete with fan, muffler and air cleaner. For continuous heavy-duty operation do not rate engine at more than 80% of the horsepower shown at any given speed.

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World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46 WISCONSIN

STRUCTURAL STEEL PRODUCTS PREFABRICATED ACCORDING TO BLUE-PRINTS

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sewers, incl. two steel trussed spans, sundry small spans on concrete piers, manholes, etc. Plans deposit $20 Contr. 1, 2, 4 and 5, $10 Contr. 3, Black & Veatch, 4706 Broadway, Kansas City 2, Mo., consult engrs. CD 1/6/47.

Ala., Gadsden—B.A. About 8/15—City, sanitary sewers for eastern part of city, $375,000. Troy E. Watford, Gadsden, Ala., engr. CD 1/23.

† **La., Lake Charles**—MAINTENANCE DOCKS—B.A. 8/15—U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., two 150x150 ft., structural steel maintenance docks, Lake Charles Air Force Base, Eng 41-243-52-7. CD 3/28.

N. C., Drexel—PARK, ETC.—B.A. 8/15—Drexel Foundation, Inc., c/o Chas. M. Graves, archt., 795 Peachtree St. N.E., Atlanta, Ga., park, swimming pool and community center. Plans deposit $25. CD 4/23.

† **Tennessee**—B.A. 8/21—Bureau P. Rds., Dpt. Commerce, Gatlinburg, Tenn.,

Sevier Co.—steel beam bridge 0.039 mi. over West Fork of Little Pigeon River, Project 15A5, Foothills Parkway. Plans deposit $10. adv Enr 8/2.

Fla., Miami—B.A. 9/5—City, City Hall, Incineration plant. Extended date. CD 3/23.

BIDS ASKED—BUILDINGS

Ala., Hartselle—WAREHOUSE, etc.—B.A. 8/7—Joe Wheeler Electric Membership Corp., Hartselle, warehouse and office. Southern Eng. Co., 1000 Crescent Ave. N.E., Atlanta, Ga., archts. (Correction-status.) CD 6/15, under CA.

Fla., Jacksonville—SCHOOL ADDN.—B.A. 8/8—Bd. P. Instruction, 605 Ocean St., Mathew W. Gilbert High School, N. 146 addn., Franklin St. Approx. $300,000 Plans deposit $25. CD 10/10/49.

† **Fla., Whiting Field**—HOUSING—B.A. 8/9—Sixth Dist. Pub. Wks. Office, Box 3653, Naval Base, S. C., construct, manage and finance 96 housing units, Proj. N-23, Milton. CD 9/22.

N. C., Asheville—HOSPITAL—B.A. 8/9—Memorial Mission Hospital of Western North Carolina at Pease House, Victoria Hospital, Asheville, 200-bed hospital. Plans deposit $100. Bid date changed. Six Associates, Inc., 1095 Hendersonville Rd., archt. CD 7/11.

Va., Norton—HIGH SCHOOL—B.A. 8/9—City, Norton high school. $500,000. Plans deposit $50. D. R. Beeson, Johnson City, archt. CD 5/21, under LB.

▲ **Ky., Lexington**—HOUSING—B.A. 8/20—Lexington Municipal Housing Comm., 600 Blue Grass Park Dr., 397 housing units, Proj., Ky 4-3, $4,500,000. Plans deposit $50, Gillig, Watkins & Wilson, 180 Walnut St., archts. Bids 6/19 rejected. CD 6/27 under LB.

Va., Blacksburg—ACADEMIC SCIENCE—B.A. 8/21—At office S. K. Cassell, bus. mgr., Virginia Polytechnic Institute, Blacksburg, academic science bldg. for State of Virginia, Richmond, $500,000. Plans deposit $25. Carneal & Johnston, Atlantic Life Bldg., Richmond, Va., archts. CD 1/2.

SOON LETS CONTRACT—HEAVY CONSTRUCTION

Ala., Gadsden—Etowah County Conservation Club, c/o Troy E. Watford, engr., Gadsden, Ala., earth, soon lets contract, dam and appurtenances. Plans deposit $10.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Conn Structors, Inc.,** Miami, Fla., CA. **$1,288,251.** supply office and warehouse, NOY. 27276, CHERRY POINT, N. C. Dpt. Navy, Officer in Charge of construction, Naval Base, Charleston, S. C. Bids June 29. CD 7/5, under LB.

† **Collie A. Carr,** Miami, Fla. LB. **$226,400.** repairs to hangars at Naval LTA facility, NOY 26825, Glynco, BRUNSWICK, GA. Dpt. Navy, Officer in Charge Constr., Box 365, Naval Base, Charleston, S. C. Bids June 13. CD 5/16.

▲† **Smith Eng. & Constr. Co.,** W. Pensacola St., Pensacola, Fla., CA, **$6,691,163.** constr. Navy Jet Air Base, near Fort Barrancas, PENSACOLA, FLA. Sixth Naval Dist., Box 365, Naval Base, Charleston, S. C. Bids June 28. CD 7/11, under LB.

† **Hodges & Co.,** Anniston, Ala., CA, **$66,327,** imprv. sanitary sewer lines at Anniston Ordnance Depot, ANNISTON, ALA. U. S. Eng., P.O. Box 1169, Mobile 7, Ala. CD 2/8, under Public buildings.

† **U. S. Eng.,** Foot of Prytania St., New Orleans, La. rejected bids June 5. approx. 47,000 cu. yd. levee enlargement, Inv. 51-211, Plaquemines Parish, LOUISIANA. CD 5/23.

T. L. James & Co., Kenner, La. **LB $794,524.** complete navigation lock with all appurtenances, Plaquemines Parish, LOUISIANA. State, Dpt. Pub. Wks., Capitol Bldg., Baton Rouge, La. Bids July 18. CD 6/7.

† **U. S. Eng.,** 606 Santa Fe Bldg., Galveston, Tex. cancelled bids to have been opened Aug. 15. maintenance docks, Lake Charles Air Force Base, Eng. 41-243-52-7, LAKE CHARLES, LA. CD 7/18.

R. D. Cooper Constr. Co., P.O. Box 38-A, Zachary, La. LB **$72,414.** 33 mi. rural distr. lines, in Rapides and Evangeline Parishes, incl. one 138 kv H-structural transmission line with steel tower crossing Red River, LOUISIANA. Louisiana Rural Electric Cooperative, Alexendria, La. Bids July 17. CD 6/28.

Kentucky—State Hy. Dpt., Frankfort,

Breslin Constr. Co., 1801 S. Brook St., Louisville, Ky. LB. **$75,982.** bit. surf. Class I, cement conc. patching 2.136 mi., Louisville-Eliabzethtown Rd., FI 26 (18), SP 56-178, Jefferson Co.; LB. **$262,889.** bit. surf. Class I, cement conc. patching 12.033 mi., Louisville-Elizabethtown Rd., FI 79 (19), SP 47-39,

47-19, Hardin Co.; LB **$95,420.** bit. surf. Class I 16.83 mi., RH Group 2, Jefferson Co.

Ballard & Hamilton, Bardstown, Ky., LB **$70,992.** reconstr., traffic bound surf., 5.768 mi., Nelson County line-Blincoe-Bear Wallow Rd., RS 115-309, 115-329, Washington Co.

Huron Contg. Co., Benton, Ky. LB. **$95,612.** grade, drain, traffic bound limestone 2.081 mi., Inner Belt line, Breckinridge Lane to US 60, U 528 (4), SP 56-898, Jefferson Co.

Porter-DeWitt Constr. Co., Poplar Bluff, Mo. LB **$126,978.** grade, drain, bank 2.406 mi., Lone Oak-Levelaceville Rd., S 207 (1), SP 73-732, McCracken Co.

George H. Cheek Constr. Co., McClure Bldg., Frankfort, Ky. LB **$63,257.** reconstr. traffic bound limestone 3.718 mi., Pigeon Roost-Schoolhouse Rd., RS 550289, Jackson Co.; LB **$158,243.** reconstr. traffic bound limestone 10.214 mi., Little Barren Rd., Summerville-Taylor County line Rd., Combined RS 44-396, 44-356 and 44-336, Green Co.

R. E. Gaddie, Inc., Bowling Green, Ky. LB **$85,063.** bit. surf. Class I, cement conc. patching 5.851 mi., Elizabethtown-Murfordville Rd., FI 169 (13), SP 50-20, 62-261, 47-109, Hardin, Hart and Larue Counties.

R. B. Tyler Co., 1446 Levering St., Louisville, Ky. LB **$60,694.** reconstr., traffic bound limestone 2.594 mi., US 62 Bullitt County Line Rd., RS 90-625, Nelson Co.

▲ **The Allen Co., Inc.,** Winchester, Ky. LB **$60,451.** bit. surf. Class I 3.747 mi., Richmond-Berea Rd., FI 299 (7), SP 76-51, Madison Co.

Adams Trucking & Contg. Co., Paintsville, Ky. LB **$185,024.** bit. surf. Class I, 6.255 mi., Pikeville-Whitesburg Rd., F 127 (20), SP 98-283, Pike Co.

Robert M. Robinson, Owensboro, Ky. LB **$69,396.** reconstr. bit. surf. Class C 1 10.25 mi., Mackville-Battle Rd., Combined RS 115-369, 115-349, Washington Co. Bids July 13. CD 7/2.

† **Wehr Constr. Co.,** 2127 S. Floyd St., Louisville, Ky. LB **$89,000.** landing facilities at Godman Air Field Base, FORT KNOX, KY. U. S. Eng., 830 W. Broadway, Louisville, Ky. Bids June 26. CD 6/27 under Public Bldgs.

Morrison-Conklin Constr. Co., 4005 Crettendon St., Louisville, Ky. LB **$74,000.** Contr. 138, subdivision sewer, LOUISVILLE, KY. Metropolitan Sewer Dist., 414 W. Jefferson St., Louisville, Ky. Bids July 9. Awarded July 17. CD 11/15/45.

Tennessee—State Hy. Dpt., Nashville, Tenn., rejected bids July 6, crushed stone surf. and bit. materials 9.207 mi. section of Secondary Route No. 2418 from Newport and Southward to Benton, Proj. S 2418 (1) Locke Co. L.B. **$166,159,** est. $160,000; grav. and bit. materials widn. and resurf. constr. curb, gutters, storm drainage 0.5 mi. on Elm St. and sect. of Church St. on State Rt. No. 21 in Tiptonville, Proj. No. SAMP 202-A, Lake Co., L.B. **$65,370,** est. $40,000; gravel and bit. materials widn. and resurf. constr. curb, gutter and storm drainage 0.881 mi. on sect. Main and Poplar Sts. from South City limits and extending to State Rt. No. 78 in Ridgley, Proj. No. SAMP 201-A, Lake Co., L.B. **$65,601,** est. $40,000. gravel or chort and bit. materials widn., construct concrete sidewalks, concrete curbs, gutters, storm sewer sys. 0.382 mi. sect. on State Hy. No. 22 in Dresden from intersection of Pikeview and Main Sts. and extending to intersection of Locust St. and Linden Ave., Proj. SAMP-126 B, Weakley Co., L.B. **$62,786.** est. $40,000. base, prime SBST 6.8 mi. Trenton from R 9013 to Rte 54 Proj. R 9058 (1); base, prime SBST 6.55 mi. from Milan to Gann School Proj. R9053 (2); base, prime SBST 6.6 from Rte 77 to Rte 43 (Dades) Proj. R 9056 (2), Gibson Co., LB **$139,146,** grade, drain 2.95 mi. from Rt. 50 to S.A.P. 7532, Proj. R-733 (2); grade, drain 4.8 mi. S.A.P. 7532 to S-4289 Proj. R-7333 (1), Marshall Co., L.B. **$65,125.** Bids July 6. CD 7/13, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Wagoner Const. Co., Salisbury, N. C., LB. **$498,900.** General constr., 6 bldgs., 3 COTTAGES, CHURCH, print shop and infirmary, THOMASVILLE, N. C. Baptist Orphanage, Bd. Trustees, Dr. I. T. Greer, chn., Thomasville, N. C., Macklin & Stinson, 226 N. Trade St., Winston-Salem, N. C., archts. Bids July 10.

Thompson & Street, Pineville Rd., Charlotte, N. C. LB. **$878,779,** general constr., LIBRARY, RALEIGH, N. C. North Carolina State College of Agriculture and Engineering, J. G. Vann, Asst. Controller, Raleigh, N. C. Bids July 12. CD 6/14.

Jas. F. Rice, Columbia, S. C. CA **$8,499.** rehabilitation ICE STORAGE BLDG., Inv. 38-081-51-16, FORT JACKSON, S. C. U. S. Eng., 33 Customhouse, Charlestown, S. C. (Correction cost). CD 7/13.

W. M. Fine Constr. Co., Spartanburg, S. C., CA. Approx. **$82,000.** WAREHOUSE and parking shed, SPARTANBURG, S. C. Southern Bell Telephone Co., c/o contractor

Byck-Worrell Constr Co., E. Bay St., Savannah, Ga., CA. **$983,847.** 125 HOUSING UNITS, ALBANY, GA. Albany Housing Auth., Albany, Ga. Bids June 7. CD 6/15, under LB.

Georgia Railroad, 20 Kenyon St. S. E., Atlanta, Ga. Owner Builds. **$85,000.** Diesel repair SHOP ADDNS., ATLANTA, GA.

Knox Constr. Co., Thomson, Ga., LB. **$332,409.** High SCHOOL, MILLEN, GA. Jenkins Co., Millen Ga. Bids July 10. CD 6/15.

▲ **Rayonier Corp.,** Fernandina, Fla., Owner Builds, **$2,985,535,** paper and pulp PLANT ADDN. FERNANDINA, FLA.

Vincent Di Camillo, 1168 S. W. 1 St., Miami, Fla. CA. **$82,000.** Mfg. PLANT, MIAMI, FLA. Bernard Keller, c/o contractor.

Star. Constr. Co., 1440 N. W. 21 St., Miami, Fla. CA. **$364,800.** Phyllis Wheatley SCHOOL, MIAMI, FLA. Dade Co. Bd. P. Instruction, 275 N. W. 2 St., Miami, Fla. Bids July 11, awarded July 13. CD 6/21.

Feldman Bldg. Corp., 605 Lincoln Rd., Miami Beach, Fla. LB. **$300,000.** Department STORE ADDN., MIAMI, BEACH, FLA. Saks-Fifth Avenue c/o Igor B. Polevitzky, archt., 250 N. E. 18 St., Miami Beach, Fla.

Daniel W. Gary, 14900 N. E. 16 Ave., Miami, Fla. CA. **$300,000.** 32 HOMES, MIAMI, FLA. Cadillac Building Corp., c/o contractor.

The Austin Co., 16112 Euclid Ave., Cleveland, O. CA. **$315,000.** Hooker's Point Cement Mfg. PLANT ADDN., TAMPA, FLA. Florida Portland Cement Div., General Portland Cement Co., 305 Morgan St., Tampa, Fla.

T. C. Brasfield, 3021 6 Ave. S., Birmingam, Ala. CA. **$300,000.** CHURCH, BIRMINGHAM, ALA. Sades Valley Presbyterian Church, 2843 Cahaba Rd., Birmingham, Ala.

C. B. Spencer, 2350 Rousseau St., New Orleans, La. CA. **$85,000.** WAREHOUSE, NEW ORLEANS, LA. Crescent Paper Box Factory, Inc., 1523 Constance St., New Orleans, La. Bids Apr. 24. CD 4/25.

St. Rita's Catholic Church, Broad Place, 2 Pine St., New Orleans, La. rejected bids July 10. church and rectory, NEW ORLEANS, LA. CD 7/6.

John Martin Co. Inc., 610 Manning St., Chattanooga, Tenn. CA. Approx. $90,000. Rebuild WAREHOUSE, CHATTANOOGA, TENN., Sears Roebuck & Co., 533 Market St., Chattanooga, Tenn.

▲ **Koch Engineering Co. Inc.,** 335 W. Lewis St., Wichita, Kan. CA. **$1,800,000.** design and construct Catalytic CRACKING PLANT, storage tanks for 3 m. gals. gas MEMPHIS, TENN. Missouri Farmers Assn. (Delta Refining Co., W. Mallory Ave., Memphis, Tenn.). Columbia, Mo. CD 3/27.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Ill., Chicago**—STRUCTURE, etc.—B.A. 8/7—Dpt. Air Force, Pentagon Bldg., Wash., D. C., structure, paving fending, electrical work for radio homer beacon, O'Hare Field, $100,000. CD 7/18.

† **O., Columbus**—HEATING SYSTEM—B.A. 8/7—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., heating sys., Bldg. No. 110, Fort Hayes, Serial No. Eng. 46-022-52-1.

▲ **Ill., Chicago**—HANGARS—B.A. After 8/15—Trans World Airlines, Inc., 10 Richards Road, Kansas City, Mo., constr. two thin-shell concrete arch hangars (span 270 ft.) and appurtenant shop and office bldg. at Chicago Midway Airport, $2,000,000. CD 7/9.

▲ **Wis., Milwaukee**—B.A. 8/15—City, Juneau Ave. Bridge, $1,206,000. Plans deposit $10. Lloyd D. Knapp, city engr. Extended date. CD 6/21.

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† **Illinois**—B.A. 8/16—U. S. Eng., 834 U. S. Court House and Custom House, 1111 4 Market St., St. Louis, 1, Mo., bridge pier protection highway bridge Chain of Rocks Canal, Granite City and vicinity of Madison Co., Inv. No. CIVENG 23-075-52-4. CD 7/23/45.

† **Illinois**—B.A. 8/24—U. S. Eng., 834 U. S. Court House and Custom House, 1114 Market St., St. Louis, 1, Mo., constr., seepage relief wells, Mississippi River, Chain of Rocks Canal, Granite City, and vicinity of Madison Co., Inv. No. 23-065-52-3. CD 7/23/45.

Ill., Granite City—B.A. 8/24—East Side Levee and Sanitary Dist., K. T. Ogle, pres. Bd. Trustees, 2642 McCasland Ave., East St. Louis, Project 15, Sect. 5 incl. 1372 ft. 48-in. rein.-con. culvert pipe, 8100 ft. 42-in. rein.-con. 760 ft. 27-in. rein.-con., manholes and appurtenances, etc. Plans deposit $10. Stephan Kernan, c/o owner, ch. engr. CD 2/10/50.

BIDS ASKED—BUILDINGS

O., Newton Falls—SCHOOL—B.A. 8/18—Bd. Educ., Newton Twp. School Dist., R.F.D. 1, Newton Falls, Newton Twp. school addn. Plans deposit $20. C. G. Kistler, Getz Bldg., N. Water St., Kent, archt.

Ill., East St. Louis—HOUSING—B.A. 8/21—St. Clair County Housing Auth., J. E. Hayes, exec. dir., 6 St. and Ohio Ave., East St. Louis, Ill., constr. housing projects incl. (A) 300-unit John De Shields Homes, Proj. 111.1-3; (B) 300-unit Roosevelt Homes, Proj. 111 1-4 and (C) 100-unit Villa Griffin Ill. 1-5. Charles B. Spencer, 929 A Missouri Ave., East St. Louis and 401 Chemical Bldg., 7201 Olive St., St. Louis, 1, Mo., archts. CD 5/31, under LB.

† **Ill., Chicago**—GARAGE ADDN. etc.—B.A. 8/21—Veterans Admin., Vermont Ave. between H & I Sts. N. W., Wash., 25, D. C., garage addn., shops and warehouse bldg. No. 6 Veterans Administration Hospital (West Side Spec. 51132, Proj. 7-4126.

▲ **O., Toledo**—LIBRARY, LAW BLDG.—B.A. About 8/21—University of Toledo, Asa Knowles, pres., Bancroft St., library and law bldg. $1,670,000. Bellman, Gillett & Richards, 518 Jefferson St., archts. CD 1/4.

O., Toledo—DORMITORIES—B.A. About 8/23—University of Toledo, Asa Knowles, pres., Bancroft St., 3 dormitories. $800,000. Peterson, Hoffman & Grow, Spitzer Bldg., archts. CD 12/26/45.

▲ **Mich., Monroe**—SCHOOL—B.A. 10/15—City, Bd. Educ., 1 story, 295x340 ft. Junior High school, Riverview Ave., $1,100,000. Warren S. Holmes Co., 2200 Olds Tower, Lansing, archts. CD 11/13.

Mich., Detroit—PLANT—Bids Asked—Ford Motor Co., Rouge Plant, 3000 Schaefer St., Dearborn, 1 story plant at Cold Rolled Mill. Giffels & Vallet, 1000 Marquette Bldg., archts.

Wis., Barton—FACTORY—Bids Asked—Wesbar Stamping Co., Barton, 1 story, 80x100 ft., steel block factory addn., J. P. Bruecker & Son, 746 E. Day Ave., Milwaukee, Zone 11, archts.

Wis., LaCrosse—FOUNDRY—Bids Asked—Allis-Chalmers Mfg. Co., 3 and Badger Sts., 1 story, 80x120 ft., concrete, steel, brick foundry addn., Carl E. Meyer, 1126 S. 70 St., West Allis, Zone 14, archt.

SOON LETS CONTRACT—BUILDINGS

Ill., Chicago—MFG. BLDG.—Phoenix Trimming Co., 2000 N. Racine St., Chicago, Zone 14, soon lets contract fourth 20,000 sq. ft. mfg. bldg., $250,000. F. V. Prather, 8 S. Michigan Ave., Chicago, 3, Ill., archt.

Ind., Fort Wayne—PLANT ADDN.—International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., soon lets contract 30,000 sq. ft. plant addn, $300,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., T. J. Kauer, Dir., Columbus 15, O.

Highway Maintenance Co., R. F. D. 3, Athens, O., CA. $130,536. est. $123,148, bit. tr. Proposals Nos. 1 to 6 inclusive, S. R. 143, 160 and 346, Athens, Gallia, Meigs and Vinton Counties;

L. P. Cavett Co., 531 Shepherd Ave., Lockland, O., CA. $130,416. est. $129,429, bit. tr. Proposals 1 and 2, U. S. R. 68 at Fayetteville, Brown Co.

Southern Quarries & Contr. acting Div. of New York Coal Sales Co., 150 E. Broad St., Columbus, O. CA. $94,336. est. $96,400. Type T-35 resurf. U. S. R. 35, Jackson Co.;

Arthur S. Langenderfer, Inc., 4690 W. Bancroft St., Toledo, O., CA. $190,915. est. $249,600. wid'n., resurf. Type T-35, Pts. 1 and 2, U. S. R. 6, Henry Co.;

Mansfield Asphalt Paving Co., Rear 153 Orange St., Mansfield, O., CA $110,000. est. $108,250, Type T-35, resurf., U. S. R. 30S, Crawford and Richland Counties; CA. **$89,715.** est. $92,300. Type T-35. b. conc. resurf. U. S. R. 224, Huron Co.;

The Ohio Engineering Co., 105 Sixth St., Lorain, O. CA. $99,994. est. $113,200. Type T-35 resurf., U. S. R. 224 at Findley, Hancock Co.

Mercon Constr. Co., 1220 National Bank Bldg., Lima, O. CA. $71,844. est. $86,100, Type T-35 and concrete structure, grading, draining, paving, S. R. 12, Hancock Co.;

S. E. Johnson Co., P. O. Box 29, Maumee, O., CA. $84,927. est. $78,500. Type T-35 wid'n., resurf. U. S. R. 30, Paulding and Van Wert Counties;

CA. $112,962. est. $146,800. bit. macad. resurf. Type T-33, U. S. R. 20A, Fulton Co.

Fenton Constr. Co., P. O. Box 310, Ashland, O. CA. $81,520. est. $78,580, Type T-35, resurf. U. S. R. 36 at Covington Darke and Miami Counties;

CA. $66,899. est. $60,490, bit. tr. Proposals Nos. 1 to 5 inclusive, S. R. 202, 71, Clark and Miami Counties;

Ohio Road Improvement Co., Chamber of Commerce Bldg., Columbus, O., CA. $63,731. est. $60,400. Type T-35 resurf. S. R. 5, Trumbull Co.;

CA. $127,125. est. $121,950, Type T-35 resurf. U. S. R. 42, Pts. Nos. 1 and 2, Medina Co.;

CA. $87,374. est. $89,400. Type T-35 resurf. U. S. R. 42 at Cardington, Morrow Co.;

The McCourt Constr. Co., 720 Home Ave., Akron, O., CA. $60,621. est. $66,750. bit. tr. one proposal, U. S. R. 224, Portage Co.;

$102,306. est. $104,150, Type T-35, construct special aggregate insulation course and b. conc. surf. S. R. 82, Portage and Summit Counties;

Churchill Constr. Co., 1126 State St., Lima, O., CA. $98,475. est. $103,680, Type T-35 resurf. U. S. R. 25, Allen Co.;

CA. $62,365. est. $57,300. Type-35 and T-32 resurf. S. R. 66 at Ft. Loramie, Shelby Co.;

Harley E. Calvin & Co., Marietta, O., CA. $85,960. est. $83,518. bit. tr. Proposals Nos. 1 to 4 inclusive S. R. 26, 145, 539 and 78, Monroe, Morgan and Noble Counties;

The Shelly Co., Thornville, O., CA. $73,095. est. $66,450. bit. tr. Proposals 1 and 2, S. R. 265, Guernsey Co.;

Ralph H. Fulk, Box 301, Hebron, O. CA. $81,663. est. $82,710. bit. tr. proposals Nos. 1 to 4 inclusive, S. R. 158, 188, Fairfield, Perry and Licking Counties. Grand total $2,106,779. Bids July 10. CD 6/29.

OHIO—State Hy. Dpt., T. J. Kauer, Dir., Columbus 15, O. Rejected bids July 10, wid'n. and resurf. Type T-35, U. S. R. 40, at Old Washington, Guernsey Co. est. **$97,300.** resurf., Type T-35, U. S. R. 250 at Mt. Eaton, Wayne Co. est. **$53,250.** bit. tr. Proposals Nos. 1 to 5 inclusive, Allen Co. est **$14,836.** cancelled bids to have been opened July 10, Type T-35 on SS-5 and steel, concrete structure, U. S. R. 22, Fairfield Co. CD 6/29.

Welsbach Corp., 1500 Walnut St., Phila. Pa., CA. $824,000. filtration plant, FREMONT, O. City, City Hall, Fremont, O. Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago, Ill., engrs. CD 3/13. under LB.

INDIANA—State Hy. Comn., Indianapolis, Ind.

Grace Constr. & Supply Co., 1915 Lincoln Bank Tower, Fort Wayne, Ind., LB, $195,412, est. $217,458, c. conc. widn and bit. resurf. 9.999 mi. US Rd. 33, Goshen, Elkhart Co.

Wm. D. Vogel Constr. Co., 3760 E. St. Clair St., Indianapolis, 1, Ind., $353,999, est. $365,568, b. conc. 18.966 mi. State Rd. 60 land U. S. Rd. 50, Huron and Shoals Lawrence and Martin Counties.

Hartong & Co., Lagrange, Ill., LB, $525,119, c. conc. widn. bit. resurf. 13.03 mi. Heron to Crown Point 1.941 mi. b. conc. resurf. E. Gary and Hobart, Porter and Lake Counties.

Paul A. Teegarden, Inc., Columbus, Ind., LB, $255,390, est. $295,686, c. conc. and bit. aggregated 10.353 mi. State Rd. 1, Conneesville to Cambridge City, Wayne and Fayette Counties. Bids July 17. CD 6/29.

Smith & Johnson, 1799 Kentucky Ave., Indianapolis, Ind., CA, $117,599, est. $150,000, rein.-con. bridge Indiana Ave. over Fall Creek, INDIANAPOLIS, IND. Bd. P. Wks., City Hall, Indianapolis, Ind. Bids July 5.

MICHIGAN—State Hy. Comn., 222 Townsend St., Lansing.

Globe Constr. Co., Kalamazoo, Mich. LB $84,956, est. $85,000. Bit. conc. surf. 2.64 mi. on US 27 and US 12, M 13-6, C3 and M 13-35, C2, Calhoun Co. Project withdrawn from bidding. bit. conc. surf. 10.84 mi. on M 37, M 41-54, C3, Kent Co. Bids July 11. CD 6/29 and 7/5.

† **McCleary-Harmon Co., 2470 Grand River, Detroit, Mich. CA $108,923.** Installation electrical distr. facilities.

Stanley Carter Co., 13540 Linwood St., Detroit, Mich. CA $157,760. Utility lines, steam lines and compressed air distr. sys.

Fattore Co., Interzone, Center Line, Mich. CA $310,564. Sanitary sewers, water lines and steam tunnel at Detroit Arsenal, DETROIT, MICH. U. S. Eng., 2015 Cadillac Tower, Detroit, Mich. CD 7/3.

BUILDINGS

LOW BIDS AND CONTRACTS

Carmichael Constr. Co., 148 E. Miller St., Akron, O. CA. $600,000. Construction work to house a new large boiler in the main POWER HOUSE, AKRON, O. B. F. Goodrich Co., 500 S. Main St., Akron, O. CD 7/12.

Adolph Johnson & Son Co., 661 Wich Ave., Youngstown, O. LB. $837,968. General constr. HIGH SCHOOL, HUBBARD, O. Bd. Educ., Hubbard, O. Bids July 18. CD 5/29.

▲ **Dpt. P. Wks.**, 705 Ohio Depts. Bldg., Columbus, O. Rejected bids June 26, 19 brick, steel, concrete buildings. LB. **$3,235,900,** est. $3,250,000; 3 story concrete, steel, brick, BOILER HOUSE. LB. **$304,700,** est. $257,000. at Ohio State Training School, MARION, O. CD 6/28, under LB.

Knowlton Constr. Co., 106 N. Main St., Bellefontaine, O., CA. $359,550. SCHOOL, MT. GILEAD, O. Bd. Educ., Mt. Gilead, O. Bids June 22. CD 6/13.

Austin Co., 510 N. Dearborn St., Chicago 10, Ill., CA $900,000, 3 story, bsmnt., ADMINISTRATION bldg. on mill premises 3210 Watling St., EAST CHICAGO, IND. Inland Steel Co., 38 S. Dearborn St., Chicago 3, Ill. Awarded July 11.

▲ **Swenson-Carlson Builders Inc., Cline Ave., East Chicago, Ind., CA, $1,500,000.** 40,000 sq. ft., steel skeleton, brick PIPE MILL, GARY, IND. Taylor

Forge & Pipe Corp., 4735 W. 14 St., Cicero, Ill. Bids June 16, awarded July 13. CD 6/12.

Sollitt Constr. Co., 301 S. Columbia St., South Bend, Ind., CA, $325,000. 1 story 44,000 sq. ft., brick, steel, concrete FACTORY ADDN., SOUTH BEND, IND. Bendix Products Div., Bendix Aviation Corp., South Bend, Ind. Awarded July 12. CD 10/13/50.

▲ **Clearing Industrial District Inc.**, 38 S. Dearborn St., Chicago 3, Ill. CA, $1,000,000. FACTORY, CHICAGO, Ill. L. A. Young Spring & Wire Co., 7510 W. 71 St., Chicago 38, Ill. Awarded July 16.. John C. Cromelin, 6455 S. Central Ave., Chicago 38, Ill., archt.

Darvey A. Hanson, 1851 Elston St., Chicago 22, Ill., LB $470,000, structural steel, brick Garvey SCHOOL at 5225 N. Oak Park Ave., Zone 31, CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago 1, Ill. Bids July 13. CD 7/3.

Chell & Anderson, 176 W. Adams St., Chicago 3, Ill., CA, $300,000, 35,000 sq. ft. FACTORY, office, DES PLAINES, ILL. Littelfuse Inc., 1865 Miner St., Des Plaines, Ill. Awarded July 11. CD 5/1.

B-Amoroso & Son, 5954 W. Arthington St., Chicago 44, Ill., CA, $216,000, steel frame, brick PLANT, EVANSTON, ILL. City Steel Co., Greenwood and Hartrey Sts., Evanston, Ill. Baranckik & Conte, 919 N. Michigan Ave., Chicago 11, Ill., archts. Awarded July 12.

Kuchard & Assocs., 221 Jewett Bldg., Des Moines, Ia., LB, $512,660, III.29-1; $884,620, III.29-2; $1,375, 800 combined III.29-1 and III.29-2, Housing Projects, FREEPORT, ILL. Housing Auth. of Stephensen Co., Freeport, Ill. Bids June 21.

Kuchard & Assocs., 221 Jewett Bldg., Des Moines, Ia., CB, $495,700 III. 9-2 and $624,300 III. 9-2 and 9-3 combined, HOUSING Projects, KEWANEE, ILL. Housing Auth. of Henry Co., Cambridge, Illl. Bids June 19. Lankton & Ziegerle, 100 Main St., Peoria, Ill., archts.

Kuhne-Simmons Co., P. O. Box 680, Champaign, Ill., LB, $980,000, constr. HOUSING proj. III. 6-4, URBANA, ILL. Housing Auth. Champaign Co., Urbana, Ill. Bids June 22. Lankton & Aiegerle, 100 Main St., Peoria, Ill., archts.

Hoeppner-Bartlett Co., 631 E. Madison St., Eau Claire, Wis., LB, $742,769, general contract, COURT HOUSE, CHIPPEWA FALLS, WIS. Chippewa Co., Chippewa Falls, Wis. Bids July 17. CD 6/21.

Gebhard-Berghammer Inc., 5420 W. State St., Milwaukee 8, Wis. CA, $853,000. General contract 3 story 66x202 ft. 54x56 ft., addn 28x28 ft., LIBRARY, MILWAUKEE, WIS. Marquette University, 615 N. 11 St., Milwaukee 3, Wis. Bids June 25. CD 6/7.

Nichols & Cox Lumber Co., 1035 Godfrey St. S. W., Grand Rapids, Mich. CA $450,000. 41 HOUSES, Lantern Hills development, EAST LANSING, MICH. Home Sites, Inc., Burcham Drive, East Lansing, Hugh Stebbins Jr., Lexington, Mass., archt.

▲ **Christman Co.**, 408 Kalamazoo Plaza, Lansing, Mich. CA $4,968,231, est. $5,000,000. 8 story, brick, steel, concrete state OFFICE BLDG., W. Michigan Ave., W. Allegan St., S. Chestnut and South Pine Sts., LANSING, MICH. State, A. N. Languis, dir. State Bldg. Dpt., Lansing, Mich. CD 7/5, under LB.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Arkansas**—B.A. 8/7—U. S. Eng., P. O. Box 97, Memphis 1, Tenn., 620,000 cu. yds. new levee, R-177SFR, Levee Station 49/24-52/30, Lester, Bay and St. Francis Drainage Dist. No. 29, Craighead Co., Serial No. CIVENG 40-041-52-5. CD 12/24/43.

Minn., Clontarf—B.A. 8/7—Swift Co., A. E. Nelson, aud., street imprvs., incl. base, bit. surf., curb and gutter, sidewalk and misc., $60,000. Plans deposit $10. K. McGinn, Rochester, engr.

† **Wyoming**—STRUCTURAL STEEL—B.A. 8/7—Bureau Reclamation Dpt. Interior, P.O. Box 289, Casper, Wyo., furnishing structural steel for Laramie substation addns., Kendrick Proj., Spec. 7035-203.

Minn., Minneapolis—SCHOOL—B.A. 8/8—Bd. Educ., M. Robinson, secy., E. H. Enger, archt. engr., 807 Broadway N.E., Wenonah Grade School on site between 23 and 24 Aves. south and between 56 and 57 Sts., $600,000. Plans deposit $10, Thorshov & Cerny, 400 Metropolitan Life Bldg., archts. CD 5/4/50.

Minn., Springfield—SCHOOL—B.A. 8/8—Bd. Educ., H. Peichel, clk., two 2 story, 65x95 ft. brick wings school addn., $325,000. Plans deposit $15, Pass & Rockey, Mankato, archts. CD 8/21/50.

Tex., Houston—B.A. 8/8—Harris County Water Control & Imprvt. Dist. 22, Court House, water supply wells. $75,000. Plans deposit $20. Garrett Engr. Co., 5008 Almeda Rd., engr. CD 4/26.

† **Iowa**—B.A. 8/9—U. S. Eng., 1709 Jackson St., Omaha, Nebr., stabilization of Mosquito Creek Channel, Agricultural Levees, Unit L-624, Inv. 52-2. CD 7/17, under LB.

Minn., Madison—HOSPITAL—B.A. 8/9—Madison Hospital Assn., M. O. Sletten, pres., 1 story, part bsmnt., 130x230 ft. hospital, $500,000. Plans deposit $20, H. H. Swanson, 500 Sexton Bldg., Minneapolis, archt.

Tex., Naples—B.A. 8/10—City, sanitary sewer sys., incl. collection lines, sewage treatment plant, pump station. $110,000. Wisenbaker, Fix & Assoc., 110½ S. Bois de'Arc St., Tyler, engrs.

Minn., Grand Marais—SCHOOL—B.A. 8/13—Bd. Educ., Cook Co., School Dist., 1 story, Cook County High School, $450,000. Plans deposit $10, M. M. Kehne, 2639 University Ave., St. Paul, archt. CD 11/20.

Tex., Dallas—SCHOOLS—B.A. 8/13—Dallas Independent School Dist., 3700 Ross Ave., Walnut Hill School addn. $351,419. Sam Biderman, National City Bldg., archt.; concrete frame, brick exterior Jefferson Davis School, slab fdn., $400,000. Jack Corgan, 2008 Jackson St., and Mark Lemmon, 1210½ Main St., archts. CD 10/20.

Tex., Nederaland—AIRLINES BLDG.—B.A. 8/13—Jefferson Co. Comrs. Court, Beaumont, airlines bldg. $150,000. Steinman & Heartfield and Woodside, Kyle Bldg., Beaumont, assoc. archts.

† **Colorado**—TRANSFORMER OIL STORAGE TANKS—B.A. 8/14 Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver, Federal Center, Denver, three horizontal 12,000 gallon welded-plate-steel transformer oil storage tanks for Flatiron Power and Pumping Plant and Pole Hill power plant, Colorado-Big Thompson Proj., Spec. DS 3493. L. N. McClellan, ch. engr.

Mo., St. Louis—B.A. 8/14—City, Frank J. McDevitt, pres., Bd. Pub. Service, 304 City Hall, Zone 3, (A) furnish and install incinerator unit with accessories, etc. near foot Meramec St.; (B) one heat exchanger with accessories; (C) one gas turbine with accessories, etc., $780,000. Walter Crecelius, 301 City Hall, Zone 3, ch. engr. bridges and bldgs. Extended date. CD 6/21.

† **Montana**—SUBSTATION—B.A. 8/14—Bureau Reclamation, Dpt. Interior, Billings, transmission div., one 115,000 volt circuit breaker, three 115,000 volt horn-gap switches for temporary Garrison substation, L. N. McClellan, Bldg. 1A, Denver Federal Center, Denver, Colo., ch. engr. CD 9/8/44.

Tex., Carthage — COURT HOUSE, JAIL — B.A. 8/14 — Panola Co., Court House, court house and jail. $500,-000. Preston M. Geren, 905 N. P. Anderson Bldg., Fort Worth, archt. CD 12/11/50.

† **Neb., Omaha** — PLANT — B.A. 8/15 — U. S. Cold Storage Co., 500 E. 3 St., Kansas City, Mo., 150x 800 ft., 150 ft. high cold storage plant. $2,500,000. A. Epstein & Son Co., 2011 Pershing Rd., Chicago 9, Ill., engrs. CD 6/19.

Tex., Nacogdoches—CHAPEL, etc.—B.A. 8/15—First Methodist Congregation, Nacogdoches, 20,000 sq. ft., face brick exterior, chapel and Sunday School. $300,-000. Shirley Simons, 1723 S. Broadway, San Antonio, archt.

Tex., Houston—B.A. 8/16—Harris Co., Court House, rein.-con. bridge over Big Vince Bayou, $225,000; rein.-con. bridge over Little Vince Bayou, $200,000; 2 pipe line bridges $300,000. Palmer & Baker, 907 Scanlan Bldg., engrs., Hugo Zapp, county engr.; underpass at Port Terminal Ry. crossing, $90,000; underpass at Port Terminal Ry. crossing, $80,000. Howe & Wise, 4119 San Jacinto St., engr.

Tex., Houston—B.A. 8/16—Harris Co. c/o Comrs. Court, Court House, 2½ mi. road const. and asph. paving for East-West access roads acct. Washburn Tunnel. $75,000. Howe & Wise, 4119 San Jacinto St., engrs. CD 3/16.

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Neb., North Platte—SCHOOL—B.A. 8/21—Bd. Educ., North Platte, school. Davis & Wilson, 225 Stuart Bldg., Lincoln, archts. CD 6/11.

TEXAS and MEXICO—B.A. 8/21—Texas Mexican Ry. Co., c/o S. K. Mason, ch. engr., Laredo, Tex. cleaning, renewing cover plates, angles, connecting plates, rivets, etc. on three 175 ft. spans of single track, pin connected, deck truss railroad bridge over the Rio Grande River between Laredo, Tex. and Nuevo Laredo, Mexico.

† **Tex., Amarillo**—SECURITY FENCE—B.A. 9/6—U. S. Atomic Energy Comn., Los Alamos, N. M., 4.7 mi. chain link security fence at Pantex Plant. $100,000. Plans deposit $50.

† **N. M., Los Alamos**—RESEARCH LABORATORY—B.A. 9/20—U. S. Atomic Energy Comn., Los Alamos, 2 story, bsmnt., monolithic type, 58,00 sq. ft. medical research laboratory, Inv. 291-52-7, $1,700,-000 to $2,000,000. Plans deposit $50. CD 7/19.

† **North Dakota**—B.A. About 9/25—U. S. Eng., Fort Lincoln, P.O. Box 300, Bismarck, excavation and main embankment, Stage IV portion of the Garrison Dam and Reservoir Proj. in McLean and Mercer Counties on the Missouri River approx. 75 mi. northwest of Bismarck; 60 mi. south of Minot; 13 mi. west of U. S. Hy. No. 83 at a point approx. midway between Coleharbor and Underwood, Serial No. CIVENG 32-015-52-6. Plans deposit $25. CD 6/1/44.

BIDS ASKED—BUILDINGS

† **Wyoming**—WAREHOUSE—B.A. 8/9—Bureau Reclamation, Dpt. Interior, Reclamation Center, Casper, Wyo., furnishing prefabricated bldg. for warehouse at Alcova Power Plant, Kendrick Proj. Inv. No. 7035-205. adv ENR 8/2.

▲ **Tex., Houston**—PLANT—Bids Asked—Eastern States Petroleum Co. Inc., c/o Ship Channel, gasoline production plant. $3,300,000. CD 4/9.

▲ **Tex., Kingsville**—CHEMICAL PLANT—Bids Asked—Celanese Corp., Kingsville, Tex., chemical plant expans. $3,500,000. CD 7/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

City, Council Bluffs, Ia., received no bids July 9, sewers, $150,000 COUNCIL BLUFFS, IA. Will re-advertise. CD 6/28.

Myers Constr. Co., Griswold, Ia., CA, $71,142, grading, COUNCIL BLUFFS, IA. Pottawatamie Co., Council Bluffs, Ia. Bids July 16. J. P. Camery, co. engr.

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul, Minn. rejected bids June 29. grading, grav. base, plant-mixed bit. surf. in Albert LEA, Freeborn Co., LB $161,630. CD 7/17 under LB.

Engstrom & Carlson, Hastings, Minn. LB $67,583. grading, precast conc. cattle pass and crushed rock surf., FARIBAULT, MINN. Rice Co., C. L. McCarthy, aud., Faribault, Minn. Bids July 10. CD 6/22.

Farrell Contg. Co., 1607 Wynne Ave., St. Paul, Minn. CA $81,356. grading, 5 mi. between 6.5 mi. east of Perz and 0.25 mi. west of Hillman, and 5.6 mi. between 27, 5 mi. north of Hillman and North county line, LITTLE FALLS, MINN. Morrison Co., L. J. Billings, aud., Little Falls, Minn. Bids June 28. CD 6/7.

E. Anderson, Isle, Minn. CA $66,800. grading 7.8 mi. between the Sauk River north of St. Martin and 0.6 mi. southwest of TH 52 in Albany, ST. CLOUD, MINN. Stearns Co., F. Ramler, aud., St. Cloud, Minn. Bids July 10. CD 6/22.

City, J. F. O'Donnell, recorder, South St. Paul, Minn. rejected bids July 16. airport facilities, SOUTH ST. PAUL, MINN. LB $103,870. CD 7/5.

† **Mid West Ditching Co.**, 411 N. 7 St., St. Louis 1, Mo. CA $67,875. water supply line at weather station, Eng. 25-066-51-41, (SP), KIRKSVILLE, MO. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 28. CD 6/19.

KANSAS—State Hy. Comn., Garden City,

San-Ore Constr. Co., McPherson, Kan. CA. $294,949. base, single asph. surf. tr. 12.263 mi. Proj. 54-60 F 038-1 (1), Meade Co. Bids July 6. CD 6/23.

Boecking Constr. Co., Bethany, Okla., LB. $516,687. est. $552,509, N.E. 13 and Lottie Ave. traffic way, OKLAHOMA CITY, OKLA. City, City Hall, Oklamoha City, Okla. Bids July 17. CD 7/11.

TEXAS—State Hy. Comn., Austin, Tex.

Norman L. Larson, 2410 Jarratt Ave., Austin, Tex., LB. $86,660. est. $60,000. wid'n. 4 bridges and approaches on State Hy. 6, Proj. C 50-3-20, Grimes Co. Bids July 18. CD 6/29.

▲ **TEXAS**—State Hy. Comn., Austin, Tex.

Ernest Loyd, P.O. Box 1120, Fort Worth, Tex., LB. $95,464. est. $60,00. grading, structures, base and surf. 8.385 mi. Hy. FM 1197, Proj. R 1350-1-1, Clay Co.;

Stone Constr. Co., 1008 W. Broadway, Ardmore, Okla., LB. $62,504. est. $60,000. grading, resection, flexible base b. conc. pavement, 2 course surf. tr. 12.541 mi. Hy. SH 24 and 114, Contr. C 134-6-10 and C. 351-2-2, Wise Co.

Worth Const. Co., P.O. Box 531, Fort Worth, Tex., LB. $203,236. est. $200,000. grading, structures 6.024 mi. Hy. U. S. 81, Proj. RI 644 (6), Bell Co.;

Austin Road Co., Box 1590, Dallas, Tex., LB. $1,013,-608. est. $200,000. c. conc. pavement 8.09 mi. Hy. U.S. 75, Proj. FI 466 (24), Galveston Co.;

R. G. Buckner, P.O. Box 609, Jacksonville, Tex., LB. $578,112. est. $200,000. grading, structural, flexible base, c. conc. pavement 1.904 mi. Hy. FM 346, Proj. R 667-2-1, Jefferson Co.;

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Heidenfels Bros., Rockport, Tex., LB. **$559,208.** est. $200,000. grading, structures, base and asph. surf. 8.394 mi. Hy. U.S. 181, Proj. F 266 (2), Karnes Co.;

C. H. Harrison, P.O. Box 185, Waco, Tex., LB. **$77,044.** est. $60,000. grading, structures, fdn. course, two course surf. tr. 0.805 mi. Hy. U.S. 67 and State 36, Proj. C 79-2 and 3- 10 and 12, etc. Comanche Co.;

Dew Constr. Co. Inc., P.O. Box 641, Tyler, Tex., LB. **$114,132.** est. $75,000. grading, structures, base and surf. 7.946 mi. Hy. FM 1281, Proj. R 510-2-1, Grayson Co.;

Schwope Bros., 6633 W. Commerce St., San Antonio 7, Tex., LB. **$181,507.** est. $180,000. grading, structures, base and surf. 33.148 mi. Hy. FM 681, 1017 and 1561, Proj. RV 669-1-3, Hidalgo Co.;

Joe Davidson, Terrell, Tex., LB. **$129,621.** est. $100,000, grading, structures, base, surf. 7.78 mi. Hy. FM 1567, and 1571, Proj. V 641-2-1, Hunt Co.;

Holland Page, Box 1181, Austin, Tex., LB. **$133,519.** est. $75,000. grading, structures, base and surf. 7.527 mi. HY. FM 1456 and SH 36, Proj. R 1410-1-1 and C 187-2-6, Austin Co. Bids July 18. CD 6/29, 7/2, 7/3 and 7/6.

Pittsburgh-Des Moines Steel Co., 1217 Praetorian Bldg., Dallas, Tex. LB **$82,240.** 500,000 gal. elevated steel storage tank, BELLAIRE, TEX. City, Bellaire, Tex. Bids July 11. CD 6/27.

City, Carthage, Tex. Own Forces. $96,600. sewer collecting lines, disposal unit, CARTHAGE, TEX. City, Carthage, Tex. CD 9/18/50.

Town, Cedar Bayou, Tex. Purchase and Hire. **$60,000.** sanitary sewers, Cedar Bayou, Tex.

Montgomery Co., Conroe, Tex. Own Forces. **$85,000.** road imprvs., surf., CONROE, TEX.

City, Fort Worth, Tex. Owner Builds. **$60,000.** addnl. sanitary sewer unit in Glen Garden, FORT WORTH, TEX. Carter & Burgess, Century Bldg., Fort Worth, Tex., engrs. CD 2/4/49.

Western Constr. Co., Hobbs, N. M. LB **$47,117.** WW sys. imprvs., STINNETT, TEX. City, Stinnett, Tex. Hatfield Engineering Co., 517 W. 10 St., Amarillo, Tex., engrs. Bids July 14.

Western Constr. Co., Hobbs, N. M. LB **$74,970.** sanitary sewers and disposal plant, STINNETT, TEX. City, Stinnett, Tex. Hatfield Engineering Co., 517 W. 10 St., Amarillo, Tex., engrs. Bids July 14.

Roy M. Mitchell Contg. Co., 2120 Erwin St., Tyler, Tex. LB **$82,424.** 5½ mi. 6 to 10 in. clay sewer pipe line, trunk plant with imhoff tank and oxidation ponds, TENEHA, TEX. City, Teneha, Tex. Bids July 13. CD 7/3.

DeWitt Co., Court House, Cuero, Tex., Force Account. approx. **$85,000.** 4.4 mi. farm to market road imprvs. from State Hy. 39 to Arneckville***Approx. $60,000. 2.8 mi. farm to market road north of Lindale, CUERO, TEX. CD 7/6.

John T. Leslie, 5513 E. Grand St., Dallas, Tex., LB. **$62,278.** four bridges, on Prairie Creek, Elam Creek, Santa Monica Lake and Hickory Creek, DALLAS, TEX. Dallas Co., Court House, Dallas, Tex., Bids July 16. Koch Fowler, 3900 Lemmon St., Dallas, Tex., engrs.

† **The Bailey Co.**, 600 Bailey St., Fort Worth, Tex. CA. **$116,949,** on Lot 1, high-powered radio station, Inv. No. Eng 41-443-51-32, FORT WORTH, TEX., U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, Tex., Bids June 28. Awarded July 17. CD 7/6. under CA.

Hamilton, James & Little, 1307 Northwood St., Houston, Tex., Own Forces. Approx. **$62,500.** sanitary sewers; Approx. $60,000. storm sewers, HOUSTON, TEX. CD 5/28.

Celanese Corp., Kingsville, Tex., Own Forces. $45,000. drainage of 5 acre evaporation pool for site of addnl. expans. of chemical plant, KINGSVILLE, TEX. CD 7/6. under Industrial Buildings.

▲† **Winston Bros. Co.**, 1532 S. California Ave., Monrovia, Calif. L.B. **$1,149,212,** est. $1,458,015. earthwork, canal lining, tunnel and structure Station F-7 plus 3.5 to Station 53 plus 70.25, Horsetooth Feeder Canal, Colorado-Big Thompson Proj., Spec. DC 3441, COLORADO. Bureau Reclamation, Dpt. Interior, Loveland, Colo. Bids June 27. CD 6/20.

▲† **Peter Kiewit Sons Constr. Co.**, 1024 Omaha Natl. Bank Bldg., Omaha, Neb., CA, **$1,287,886,** est. $1,116,653 Sch. 1 and 3, constr. Willow Creek pumping plant and Willow Creek pump-canal about 4 mi. north of Granby, Colorado-Big Thompson Proj., Spec. DC 34-94 COLORADO Bureau Reclamation, Dpt. Interior, Grand Lake, Colo. Bids June 7, awarded July 16. CD 6/12, under LB.

▲ **Northwestern Eng. Co.**, 6000 Colorado Blvd., Denver, Colo., CA **$1,411,898,** est. $1,324,686, surf. c.conc. and plant mixed oil processing 18.663 mi. State Hy. No. 185, Colo. Proj. FI 002-2 (15), Arapahoe and Douglas Counties, COLORADO State Hy. Dpt., 518 State Office Bldg., Denver, Colo. Bids June 12, awarded July 16. CD 6/7.

BUILDINGS

LOW BIDS AND CONTRACTS

Chicago, Rock Island & Pacific R.R., W. B. Throckmorton, ch. engr., La Salle St. Station, Chicago, Ill., Own Forces, $500,000, CLASSIFICATION YARD, incl. 14 tracks, 127-car capacity each, etc. COUNCIL BLUFFS, IA.

Theo. J. Molzahn & Sons, 1812 Madison St., La Crosse, Wis. LB **$343,000.** 2 story 60x267 ft., GRADE SCHOOL, WAUKON, IA. Bid. Educ., Waukon, Ia. Bids July 11. CD 6/22.

A. H. Haeseler Building & Contg. Co., 2306 Delmar Blvd., St. Louis 3, Mo. LB **$94,821.** 1 story, 80x140 ft. and 40x60 ft., brick, masonry, concrete MFG. AND OFFICE BLDG., 1376 Ferguson Ave., PAGEDALE (ST.

LOUIS 14, P. O.), MO. Watlow Electric Mfg. Co., 1320 N. 23 St., St. Louis 6, Mo. Hale & Harrie, 915 Olive St., St. Louis 1, Mo., engrs. Bids July 10.

Fruin-Colnon Contg. Co., 1706 Olive St., St. Louis 3, Mo. CA **$250,000.** 1 story, 35x72 ft., brick, masonry, steel vaporizing BLDG., 224 E. Catalan St.; 1 story, steel, masonry COMPRESSOR BLDG., 220 E. Catalan St., installation of 25 propane gas tanks, 237 E. Catalan St., ST. LOUIS, MO. Laclede Gas Co., 1017 Olive St., St. Louis 1, Mo.

Fruin-Colnon Contg. Co., 1706 Olive St., St. Louis 3, Mo. CA 1 story, 83x134 ft., 72x85 ft., 30x125 ft. metal fabricating PLANT addns., 117 Miller St., ST. LOUIS, Mo. Nooter Corp., 1401 S. 2 St., St. Louis 4, Mo.

H. Kissel Sons, 2140 E. College Ave., St. Louis 7, Mo. CA **$129,500.** 2 story, 75x130 ft., rein.-con., brick WAREHOUSE for brake service equip., 2000 block Cass Ave., ST. LOUIS, MO. Barrett Equipment Co., 2101 Cass Ave., St. Louis 6, Mo. Vincil F. Hunter & Son, 6050 Odell St., St. Louis 9, Mo., archts.

Jerry Constr. Co., 14 S. Central Ave., Clayton, St. Louis 5, Mo. Separate Contracts. **$300,000.** thirty-seven 1 story, 24x36 ft. or 24x40 ft. frame DWELLINGS with concrete fdn., Bridgevale and Northdale Sts., ST. LOUIS CO., MO.

Schuermann Building & Realty Co., 5934 Natural Bridge Ave., St. Louis 14, Mo. Owner Builds. 300 brick frame DWELLINGS, Schuermann's Bissell Hills subdivision bounded by Chambers, Bellefontaine and Hy. 99, ST. LOUIS CO., MO.

Witte & Juckette, 515 S. 48 St., Lincoln, Neb., Owner Builds. Approx. **$350,000.** 50 DWELLINGS, LINCOLN, NEB.

Farnsworth & Chambers, Inc., Box 74, Houston, Tex. LB **$105,462.** rein.-conc., steel TRUCK DUMPER BLDG., HOUSTON, TEX. Harris Co., Ship Channel Navigation Dist., Wharf 13, North Side Turning Basin, Houston, Tex. Bids July 12. CD 7/3.

▲ **J. M. Odom,** Box 774, Austin, Tex., LB **$1,143,931.** est. $950,000. 110,000 sq. ft. masonry HIGH SCHOOL, concrete pier and beam fdn., steam heating, South Austin, AUSTIN, TEX. Austin Independent School Dist., Austin, Tex. Bids July 17. CD 6/25.

A. J. Whipple, R. F. Jordan and C. Burton, Angleton, Tex. Owner Builds. $315,000. 40 DWELLINGS, Unit 2 ANGLETON, TEX. CD 6/26.

Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex. CA **$329,425.** oil well supply PLANT; CA **$219,195.** oil well maintenance and supply STORAGE BLDG.; CA **$289,115.** oil well drilling supply SHOP, HOUSTON, TEX. Schlumberger Co., 2720 Leeland St., Houston, Tex. CD 7/12.

▲ **R. H. Hopkins & Assoc.,** 4801 Lemmon St., Dallas, Tex., LB **$4,282,000.** est. $5,500,000, construct, manage, finance, 306 low cost DWELLINGS, brick exterior, concrete slab fdn., FHA Proj. No. 113-80004, AF No. 2, Sheppard Air Force Base, WICHITA FALLS, TEX. U. S. Eng., Box 61, Tulsa 2, Okla., Bids July 13. CD 7/2.

Allison & Hutchinson, P. O. Box 3, Roswell, N. M., LB. **$653,894.** concrete, brick, glass, steel and pumice 24-classroom SCHOOL, ALAMOGORDO, N. M. Bid. Educ., Alamogordo, N. M., Wolgamood & Millington, 504 E. Palace Ave., Santa Fe, N. M., archts., Bids July 17.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Utah, Tooele**—RUNWAY LIGHTING—B.A. About 8/14—U. S. Eng., 10 W. 1st South St., Salt Lake City, Zone 1, runway lighting, Dugway Proving Ground, Inv. No. Eng. 04-203-52-79. Plans deposit $20.

Calif., Goleta—B.A. 8/14—Santa Barbara College, University of California, Goleta, grading, step 2 excavations, etc. at college. Plans deposit $25.

Calif., Los Angeles—B.A. 8/14—Bd. Supervs., Los Angeles Co., 501 Hall of Records, Imprv. Garfield and Malt Ave. Washington Blvd. to Anaheim-Telegraph Rd., C C 0-695, $60,000. C. E. Arnold, co. engr.

† **Arizona**—Nevada—B.A. 8/20—Bureau Reclamation Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., constr. headquarters bldg. for system operations and maintenance area, David Dam Proj., Spec. DC-3498. L. N. McClellan; ch. engr. adv. ENR 7/26.

Calif., Tracy—B.A. 8/21—State Div. Architecture, P. Wks. Bldg., Sacramento, sewage and water project at California Vocational Institute near here Plans deposit $25.

† **Oregon**—GANTRY CRANE—B.A. 8/30—U. S. Eng., 628 Pittock Block, Portland, Zone 5, design, mfg. and delivery f.o.b. railroad cars at Gates and to erect and test one 12 ton gantry crane, Serial No. CIVENG 35-026-52-25.

BIDS ASKED—BUILDINGS

▲ **Calif., Sacramento**—WAREHOUSE, etc.—B.A. 8/10—Sacramento Municipal Utility Dist., 59 and R Sts., Sacramento, warehouse and service center. Jas. E. McCaffrey, gen. mgr. and ch. engr. of dist. Extended date. CD 6/19.

▲ **Calif., San Diego**—HOUSING—B.A. 8/15—U. S. Navy, Eleventh Dist., San Diego, construct, manage and finance second unit, 895-unit housing project for Naval Base, $1,000,000. Plans deposit $200. Wilson, Paderewski, Mitchell, Deasy, 816 at 5 St., Los Angeles, Calif., archts.

Calif., San Jose—COUNTY OFFICE—B.A. 8/22—Santa Clara Co., Court House, San Jose, county office bldg., Unit 1, at N. First and Rosa Sts., $430,000. Plans deposit $50. Clark & Stromquist, 321 Channing Ave., Palo Alto, Calif., archts. CD 2/5/47.

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IDAHO—State Hy. Dpt., Boise
Morrison-Knudsen Co., 319 Broadway, Boise, Idaho, LB $143,921, est. $138,336, wid'n. and constr. plant mix bit. 4.54 mi. Canyon Co.
Roy L. Bair & Co., W 1220 Ide St., Spokane, Wash., LB $140,497, est. $144,537, bit. 3.86 mi. U. S. Hy. 10, Kootenai Co. CD 1/22/46.
† **Utah**—Bureau P. Roads, Dpt. Commerce, 473 Federal Bldg., Ogden, Utah.
Whiting Haymond, Springville, Utah, CA. $128,820. construct 10.71 mi. gravel surfaced roadway, Cedar-Lony Valley Forest Ro. in Dixie National Forest, Iron Co. Bids June 27. CD 6/14.
Bureau Reclamation, Dpt. Interior, Phoenix, Ariz., rejected bids June 14, Schedule 1, transformers for Tucson Substation, Davis Dam Proj., Spec. 3005-25, ARIZONA. New bids 7/26. CD 6/4.
† **Estep Electric Co.**, Yakima, Wash., CA, $71,843 22 mi. electric distribution lines from Grandview substation to 3 pumping plants in Satus District GRANDVIEW, WASH. Bureau of Indian Affairs, Interior Bldg. Wash., D. C.
WASHINGTON—State Hy. Dpt., Olympia, Wash.,
N. Fiorito Co., 844 W. 48 St., Seattle, Wash., CA, $246,161, 5 rein.-con. slab and girder bridges on 0.7 mi. Primary State Hy. No. 2, Grand Ridge to Preston with grading and b. conc. paving approaches King Co. Bids July 17, awarded July 17. CD 7/6.
† **J. A. Terteling & Sons Inc.**, 4011 Fairview Ave., Boise, Idaho, LB, $510,276, est. $507,799, Union Pacific Ry. bridge over Walla Walla River and overpass for State Hy. No. 3 Inv. No. 51-67, Walluia, Walla Walla Co. WASHINGTON. U. S. Eng., City-County Bldg., Walla Walla, Wash. Bids July 17. CD 6/11.
WASHINGTON—State Hy. Dpt., Olympia, Wash. rejected bids July 17, clearing, draining, grading, surf. and rein.-con. girder bridge on 4.81 mi. Primary State Hy. No. 5, Morton to Fern Gap, Lewis Co. CD 7/6.
WASHINGTON—State Hy. Dpt., Olympia, Wash.,
G. J. Norris, Shelton, Wash., CA, $87,483, draining, grading, surf. 4.1 mi. Rose Valley Rd., Cowlitz Co.
Carboo Bros., 3430 N. Cook St., Spokane, Wash., CA $97,029, reconstr. roadway and bit. 13.8 mi. Secondary State Hy. 4-A, Junction Kettle Falls Rd. to Malo Ferry Co.
Birch McCartney, Veradale, Wash., CA, $112,304, draining, grading, surf. 4.2 mi. Secondary State Hy. 6-B. Davis Lake to Usk, Pend Oreille Co.
T. Scalzo, 3211 Airport Way, Seattle, Wash., CA, $181,977, clearing, draining, grading t. conc. 0.9 mi. Secondary State Hy. 1-K, Muklilteo north, Snohomish Co. Bids July 17, awarded July 17. Grand total $478,793. CD 7/6.
† **H. Govan**, Port Angeles, Wash., CA, $194,852, clearing, draining road in Olympic National Forest Proj. 2-D3, Unit 1, Clallam and Jefferson Counties, WASHINGTON. Bureau P. Rds. Dpt. Commerce, Morgan Bldg., Portland, Ore. Bids July 17. CD 7/9.
Northwest Constr. Co., 3950 6 Ave., N.W., Seattle, Wash., CA, $186,762, est. $181,443, paving 26 Ave. W. and other streets.
Seattle Contracting Co., 101 Nickerson St., Seattle, Wash., CA, $95,453, est. $94,450, paving 21 Ave. S.W., et al, SEATTLE, WASH. City, County-City Bldg., Seattle, 4, Wash. Bids July 5. CD 6/29.
Oregon—State Hy. Comn., Highway Bldg., Salem, Ore.,
Lloyd Calkins, Ocean Lake, Ore., CA. $70,845, 110 ft. bridge, Bridge Creek sect. Ochoco Hy., Wheeler Co. Bids July 16. Awarded July 16.
Oregon—State Hy. Comn., Highway Bldg., Salem, Ore.,
F. C. Scott, 11032 S.E. Powell St., Portland, Ore., CA. $97,360. west approaches to Salem Bridge on Salem-Dallas Hy., Polk Co. Bids July 17. Awarded July 17. CD 7/9.
Oregon—State Hy. Comn., Highway Bldg., Salem, Ore., rejected bids July 16, 2.38 mi. grading, 100 ft. bridge, 2.47 mi. surf., Oregon Coast Hy., Clatsop Co. L.B. $449,224; rejected bids 0.11 mi. grading, 0.3 mi. paving, L.B. $23,633. R. H. Baldock, c/o owner, engr.
Oregon—State Hy. Comn., Highway Bldg., Salem, Ore., rejected bids July 17, surfacing and bridge, Klamath Lake Secondary Hy., Klamath Co. L.B. $589,959. CD 7/9.
▲ **Oregon**—State Hy. Comn., Highway Bldg., Salem, Ore.
Newport Constr. Co., 7031 N. E. Halsey, Portland, Ore., CA. $399,185, 8.73 mi. grading, paving, 76 ft. bridge, Baker-Unity Hy., Baker Co.***
Parker-Schram Co., Builders Exchange Bldg., Portland, Ore., CA. $456,125, topping and paving 11.7 mi., Meridian-Duval Creek sect., Willamette Hy., Lane Co.; CA. $479,600. topping and slope protection 7.36 mi. Columbia River Hy., Wasco and Hood River Counties. Grand total $1,334,910. Bids July 16. Awarded July 16. R. H. Baldock, c/o owner, engr.
Oregon—State Hy. Comn., Highway Bldg., Salem, Ore.,
D & H Paving Co., Vancouver, Wash., CA $149,696, grading, paving 1.06 mi. Pacific Hy. East, Marion Co.;
J. N. Conley, 4332 N. E. Royal Court, Portland, Ore., CA. $227,361, grading 2.04 mi., 100 ft. grade separation, 156 ft. bridge, Big Creek Sect. Columbia River Hy., Clatsop Co.;
Babler & Rogers, 4617 S. E. Milwaukie St., Portland, Ore., CA. $327,608, grading 11.5 mi., paving 12.07 mi., Myssa-Adrian Hy., Malheur Co. Grand total $704,665. Bids July 17. Awarded July 17. CD 7/9.
▲† **Consolidated Builders, Inc.**, Box 317, Mill City, Ore. LB, $7,397,547. est. $5,822,197, construct Big Cliff Dam, complete Detroit Dam, North Santiam River, Civeng 35-026-51-300, Marion Co. OREGON. U. S. Eng., Pittock Block, Portland, Ore. CD 10/15/44.
† **Ralph Corning Constr. Co.**, Bellingham, Wash., L $187,032. log and clear right of way for Lolo Pa Sect., Big Eddy-Troutdale 230 kv line, Inv. 592 Hood River and Clackamas Counties. OREGON. Bonn ville Power Admin., 827 N. E. Oregon St., Portlan Ore. Bids July 16. CD 7/5.
† **Power City Electric Co.**, N 910 Howard St., Spokan Wash., CA. $349,488, clear right of way and constru McNary-Pendelton 230 kv line, 40 mi., Inv. 592 Umatilla Co. OREGON. Bonneville Power Admin 827 N. E. Oregon St., Portland, Ore. Bids July 1 CD 7/5.
United Contracting Co., 9898 N. E. Hancock St Portland, Ore. CA. $98,200. street constr., impr THE DALLES, ORE., City, City Hall, The Dalle Ore., Homer S. Wall, city engr. Bids July Awarded July 16.
CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacra mento, Calif.,
Chas. S. Moore & Robt. B. Murdoch, 5376 Belgra Place, Oakland, Calif., LB, $64,915, bridge, ap proaches across North Fork Calaveras River, ne San Adreas, Calaveras Co. Bids July 11. CD 6/2
CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacra mento, Calif. rejected bids June 27, plant mix sur 7.2 mi. between Lake County line and 1.5 m north of Calistog, Napa Co. L.B. $236,903.
grading, surf., rein.-con. bridge .6 mi. Indian Cree near Crescent Mills, Plumas Co., L.B. $193,28 CD 7/9 under LB.
CALIFORNIA—State Div. Hys., 120 S. Spring St Los Angeles,
R. A. Erwin, Box 244, Colton, Calif., LB, $164,08 grading, surf. 3.6 mi. on Hole and Holden Aves west Riverside city limits, Riverside Co. CD 6/2
▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg Sacramento, Calif.,
Griffith Co., 1060 S. Broadway, Los Angeles, Calif. LB $1,023,574, grading, rein.-con. bridges 3.7 mi across Arroyo Parida, between .5 mi. east of Arroy Parida and Ortega Hill, Santa Barbara Co.
United Concrete Pipe Corp., Box 425, Baldwin Park Calif., LB, $124,727, roadbed, surf. 6.4 mi. betwee Snelling and Stanislaus County Line, Merced Co.
M. J. Ruddy & Son, 922 J St., Modesto, Calif., $83, 325, roadmix, grading, etc. 3 mi. Firebaugh-Mader Road, Madera Co. Bids July 11. CD 6/20.
Westates Electric Constr. Co., 3523 Washington Blvd. Los Angeles, Calif., LB, $102,830, highway light ing and illuminated signal system on Santa An Freeway from Broadway to 1 St., Orange Co. CALI FORNIA. State Div. Hys., 120 S. Spring St., La Angeles, Calif.
† **R. A. Watson Co.**, North Hollywood, Calif., CA $624,228, est. $622,300, furnishing and installin additional distribution mains for Lindsay-Strath more irrigation district, Friant-Kerh Canal Distribu tion Systems, Central Valley Proj., Spec. DC-3414 CALIFORNIA Bureau Reclamation, Dpt. Interior Lindsay, Calif. Bids June 19, awarded July 16. CD 6/26, under LB.
J. Henry Harris, 2657 9 St., Berkeley, Calif., LB, $108,252, grading, paving for classroom bldg. Univer sity of California, BERKELEY, CALIF. Bd. Regents, University of California, 2288 Telegraph Ave., Berke ley, Calif. Bids July 11.
▲† **Allison Hower Co.**, 312 N. Main St., Santa Ana, Calif., CA, $1,243,625, preservation bldg. and sup ply warehouse at Marine Air Station, Spec. 29076, EL TORO, CALIF. U. S. Navy, Eleventh Naval Dist., San Diego, Calif. Bids June 29.
† **Drury Electric Co.**, Fuller Bldg., San Bernardino, Calif., CA, $391,882, electrical distribution system, Randsburg Wash Test Range facilities, Naval Ord nance Test Station, Spec. 29071, INYOKERN, CALIF. Naval Ordnance Test Station, Inyokern, Calif. Bids July 19. CD 6/26.
George Miller Constr. Co., 3032 Bandini Blvd., Ban dini, Calif., LB, $139,799, sanitary sewers in Shreve Rd., C. L. 1286, Whittier, LOS ANGELES, CALIF. B. Supervs., Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids July 17. CD 6/27.
Chas. W. Pettifer, 703 W. 14 St., Long Beach, Calif., CA, $497,000, Lacy St. Incinerator alterations, LOS ANGELES, CALIF. City Council, City Hall, Los Angeles, Calif. Lloyd Aldrich, city engr.
▲† **Morrison-Knudsen Co.**, 401 W. 5 St., Los Angeles, Calif.,
Macco Corp., 14409 S. Paramount Blvd., Paramount, Calif.,
Ford Twaits Co., 449 S. Beaudry St., Los Angeles, Calif., CA, $3,370,996, constr. runway 6R-24L, etc., Spec. 29062, MIRAMAR, CALIF. Eleventh Dist., San Diego, Calif. Bids June 29, awarded July 17. CD 7/5, under LB.
† **Chicago Bridge Iron Co.**, 200 Bush St., San Francisco, Calif., LB, $2,590,205, steel shell and support structure for 8-ft. supersonic wind tunnel at Moffett Field MOFFETT FIELD, CALIF. National Advisory Committee for Aeronautics Ames Laboratory, Moffett Field, Calif.
V. R. Dennis Constr. Co., Box F, Hillcrest Station, San Diego, Calif., CA, $129,489, c. con. parking apron at Lindbergh Field, SAN DIEGO, CALIF. City Council, Civic Center, San Diego, Calif. Bids June 20. CD 8/25/47.
O. A. Fogelbert, Lafayette, Calif., LB, $111,276 West Central Drainage Proj. 50-1 (Units 1, 4 and 5,) SAN MATEO, CALIF. City, city clk., City Hall, San Mateo, Calif. Bids July 16. CD 7/2.
▲† **R. E. Hazard Contg. Co.**, Clyde W. Waads & Sons, Bruce R. Hazard, Box 1951, San Diego, Calif., CA, $1,165,200 extending runway 11-29 and taxiways, Naval Air Station SAN DIEGO, CALIF. Eleventh Naval Dist., San Diego, Calif. Bids June 26, awarded July 18. CD 6/29, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Stone & Webster Engr. Corp.**, 90 Broad St., New York, N. Y., CA. Approx. $1,500,000. design and construct 5,000 kw steam POWER PLANT, CEDAR CITY, UTAH. Southern Utah Power Co., Cedar City, Utah.

† **Lembke, Clough & King**, P.O. Box 144, Albuquerque, N. M., CA. $425,660. est. $379,735, three 1 story rein.-con. BUILDINGS, 14,000 sq. ft. area, Bldgs. 3, 10 and 11, Location A, Inv. No. 291-51-152, LAS VEGAS, NEV., U. S. Atomic Energy Comn., Los Alamos, N. M., Bids June 30. Holmes & Narver, 300 Fremont St., Las Vegas, Nev., archts., Awarded July 11. CD 6/20.

K. T. Henderson, 711 Commerce St., Longview, Wash., LB $652,963, 19-room junior high SCHOOL, KELSO, WASH. School Dist. 403, Kelso, Wash. School Dist. 403 Kelso, Wash. Bids July 12. CD 6/25.

W. W. Oehlein, Inc., 5345 N. Hopkins St., Milwaukee 9, Wis. CA 1 story, 250x360 ft., sta.-l. concrete, blocks, brick FACTORY, UNION GAP, WASH. Kieckhefer Container Co., 1715 W. Canal St., Milwaukee 4, Wis. CD 6/28, under LB.

Russell A. Cullen, Inc., 478 Jackson St., San Francisco, Calif., CA, $350,000. WAREHOUSE at 7 and Pott Sts., BERKELEY, CALIF. S. & W. Fine Foods Co., 5 and Jackson Sts., Oakland, Calif. Thos. F. Chace, 268 Market St., San Francisco, structural engr. Donald Beach Kirby and Thos. B. Mulvin, 461 Market St., San Francisco, Calif., archt. Awarded July 9.

Crown Constr. Co., 1231 S. La Brea Ave., Los Angeles, Calif. CA $306,150. Northview SCHOOL Addn., DUARTE, CALIF. Duarte School Dist. 1137, Central Ave., Duarte, Calif. Flewelling & Moody, 3112 Los Filiz Blvd., Los Angeles, Calif., archts. CD 5/26.

W. C. Anderson & Assocs., P.O. Box 1831, Las Vegas, Nev., LB, $984,000, 125-unit Army HOUSING proj. Sierra Ordnance Depot, 125-80002, HERLONG, CALIF., U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids July 16. CD 7/2.

▲ **Robert E. McKee Inc.**, 4700 San Fernando Rd., West, Los Angeles, Calif., CA, $8,261,160, general contract Abbett Electric Co., 472 Tehama St., San Francisco, Calif., CA, $1,180,437, electrical work, MEDICAL CENTER, LOS ANGELES, CALIF. Bd. Regents, University of California, 405 Hilgard Ave., Los Angeles, Calif. Bids June 28. CD 7/3, under LB.

M. St. John, 219 S. Hawthorne St., Los Angeles, Calif., CA, $450,000. rein.-con. OFFICE and clinic bldg., LOS ANGELES, CALIF. 241 N. Figueroa Corp., c/o Geo. W. Novikoff, engr., 6400 Crenshaw Blvd., Los Angeles, Calif.

S. J. Amoroso & Son, 2100 Oakdale Ave., San Francisco, Calif. LB, $342,148, CAFETERIA bldg. San Francisco State College, SAN FRANCISCO, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids July 17. CD 6/21.

▲ **Nomellini Constr. Co.**, 939 Marengo Rd., Stockton, Calif., CA, $1,937,885, general contract, RECIEVING and TREATMENT UNIT, Stockton State Hospital, STOCKTON, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids June 5, awarded July 13. CD 6/12, under LB.

Jones Bros., 147 San Vicente Blvd., Beverly Hills, Calif., LB, $553,900, est. Torrance High SCHOOL ADDNS., TORRANCE, CALIF. Torrance Unified School Dist., 2335 Plaza Del Amo, Torrance, Calif. Bids July 1. CD 7/2.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Lytle & Green** and **S. Birch & Sons**, Anchorage, Alaska, LB, $4,720,330, est. $3,507,518, outside utilities, Phase B, Inv. No. 51-105, Eielson Air Force Base, ALASKA. U. S. Eng., New Washington Hotel, Seattle 1, Wash. Bids July 17. CD 6/26.

LATIN AMERICA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Colombia, Barrancabermeja—Empresa Colombiana de Petroleos, Govt. Columbia, Bogota, has received bids for the construction of a catalytic cracking plant from Arthur J. McKee Corp., 2300 Chester St., Cleveland, O. and from Foster-Wheeler Corp., 165 Broadway, New York, N. Y. Cost will be about $22,000,000 to $25,000,000. International Petroleum Co., 434 University Ave., Toronto 2, Ont., Canada will operate plant. Plans for a pipe line from Cantimpoira to Puerto Salgar to cost $7,500,000.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

H. R. MacMillan Export Co. Ltd., 837 W. Hastings St., Vancouver, B. C., own forces, $120,000. PLANT EXTEN. foot of Kinrose St., VANCOUVER, B. C. CD 6/26.

PROPOSED PROJECTS

WATER SUPPLY

Okla., Hollis—City, addnl. water supply lines to serve city distr. sys. $100,000. W. L. King, c/o owner, engr.

Tex., Calvert—Town, WW. $185,000.

Tex., Franklin—Town, WW. $150,000.

Tex., Navasota—City, WW. $185,000.

Tex., Port Isabel—City, voted bonds, Proj. No. 1, earthen reservoir, sufficient for domestic water storage 2 years, $200,000; Proj. No. 2, 30 in. pipe line from Reservoir to city limits, $350,000. CD 6/28.

Que., St. Joseph D'Alma—Municipality, J. E. Cote, secy., imprvt. in water supply, incl. filter plant, Approx. $600,000.

SEWERS, WASTE DISPOSAL

Ind., Richmond—City, Bealview sanitary sewer to serve area from S. L. St. to S. Q. St. from 4 to 9 Sts., $300,000. S. W. Hodgin, city engr.

Pa., Clairton—Clairton Municipal Auth., Clairton, sewage disposal plant and sewers, $250,000. Laboon & Bankson, 1116 Berger Bldg., Pittsburgh, engrs. CD 11/7/46.

Tex., Baytown—City, bond election Sept. 22, Job. 2, sanitary sewer lines, $350,000; Job 3, storm sewers, $500,000; Job 5, sewage disposal plant, $130,000. George M. Hillyer, city engr. CD 10/5/50.

Tex., Galveston—Allen & Co., 30 Broad St., New York 4, N. Y., storm sewers, drainage, earthwork site development $85,000; sanitary sewers, $75,000 in Industrial areas, on Pelican Island.

Wash., Renton—City, City Hall, sewers in Earlington Dist., $101,150.

Wis., Mondovi—City, sewage treatment plant and sanitary and storm sewers, $242,880.

EARTHWORK, WATERWAYS

O., Wapanoketa—Joint County Comn. of Auglaize, Mercer, Shelby, Darke and Miami Counties, Court House, Wapanoketa, wid'n. deepen, straighten Loramie and Mile Creeks. $175,000.

Tex., Galveston—Allen & Co., 30 Broad St., New York 4, N. Y., bulkheads, $250,000; raising portion Pelican Island grade line, incl. filling, $500,000.

AIRPORTS

▲† **Ala., Selma**—AIR BASE IMPRVS.—U. S. Eng., P. O. Box 1169, Mobile 7, Ala., Craig Air Force Base imprvs. $1,322,000.

† **Fla., Panama City**—AIR BASE IMPRVS.—U. S. Eng., P. O. Box 1169, Mobile 7, Ala., Tyndall Air Force Base imprvs., $928,000. CD 2/20/50.

▲ **Ill., Chicago**—STRUCTURES—U. S. Eng., 520 Merchandise Mart, Chicago, 54, Ill., misc. structures, O'Hare Field $1,892,000.

BRIDGES

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City 5, Okla.

Garvin Co.—bridge over Rush Creek on U. S. 77 at Pauls Valley, $125,000.

McCurtain Co.—bridge over Red River jointly by Okla. and Texas Hy. Dpts. at Idabel, Okla. $1,000,000. G. H. Bittle, c/o owner, engr. CD 4/26.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg.

Dauphin and Perry Counties—construct bridge for highway traffic over Susquehanna River between Millersburg and a point in Perry Co. $1,500,000. E. L. Schmidt, c/o owner, ch. engr.

Tex., Fort Worth—Tarrant Co. Water Control & Imprv. Dist. No. 1, c/o Joe B. Hogsett, pres., Fort Worth, rein.-con. and structural steel bridge across Trinity River to replace present structure at E. 4 St. crossing. $350,000. Freese & Nichols, 407 Danciger Bldg., consult. engrs. CD 10/31/45.

Tex., Galveston—Allen & Co., 30 Broad St., New York 4, N. Y. Construct bridge between Galveston Mainland and Pelican Island, $750,000.

STREETS AND ROADS

Ark., Newport—City, Newport, wid'n., Front St. to run Highway 67 thru city by new route, $151,545.

† **Tex., Amarillo**—U. S. Atomic Energy Comn., Los Alamos, N. M., plans by Silas Mason & Co., Pangex Plant, Amarillo, rehabilitation 21 mi. existing roads, rehabilitate 3 existing parking areas, construct approx. 9½ mi. new roads, 2 new parking areas, $250,000-$500,000. R. B. Jewell or D. S. Waddy, c/o owner, engr.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City 5, Okla.

Canadian Co.—rebuild State Hy. 4 above the flood zone at Yukon. $200,000. G. H. Bittle, c/o owner, engr.

Tex., Galveston—Allen & Co., 30 Broad St., New York 4, N. Y., street constr. and permanent type paving on Pelican Island, $500,000.

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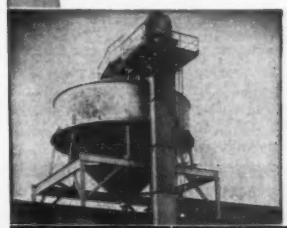

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Philip D. Barnard, 2036 Addison, Houston 6, Tex.
Western Steel Prod. Co., 1755 W. 13th Ave., Denver 4, Colo.

AIRPORTS

▲† **N. M., Clovis**—AIR BASE—U. S. Eng., Box 1538, Albuquerque, hangars, $750,000; shop-equipment repair, $400,000; warehouse units, $1,250,000; fueling sys., $500,000; airfield and area paving, $1,000,000; outside area lighting, $200,000; administration-operational bldg., $400,000; misc. constr. $500,000; sewers, $60,000; water likes, facilities, $55,000; roads, streets, $65,000 for Clovis Air Force Base.

O., Dayton—HANGAR—Ohio Aviation Co., Dayton Airport, Dayton, permanent type hangar at Dayton Municipal airport, $100,000.

Okla., Ponca City—AIRPORT—City, Ponca City, rebuild and enlarge the Ponca City Municipal Airport. $290,000. Fred Fellows, Ponca City, consult. engr.

▲ **Tex., Fort Worth**—FIELD, AREA PAVING, etc.—U. S. Eng., 1127 Texas and Pacific Bldg., field and area paving, $2,500,000; barracks, $6,000,000; fueling sys., $150,000; hangars, $1,750,000; storage, $1,750,000; outside lighting, $75,000; administrative and operational, $1,500,000; mess halls, $1,250,000; misc. constr. $3,000,000; water sys., $50,000; sewers, drainage, $75,000 for Carswell Air Force Base, CD 2/1.

▲† **Wyo., Cheyenne**—BARRACKS, ETC—Dpt. Air Force, Pentagon Bldg., Wash., D. C., barracks, or housing, $2,000,000; field and area paving, $2,500; mess halls, $1,000,000; storage, $750,000; lighting, $75,000; site earthwork, grading, leveling, drainage, $80,000; water system, $50,000; sanitary sewers, $65,000; miscellaneous construction all at Francis E. Warren Air Force Base, $760,000.

▲† **Alaska**—AIR FIELDS—U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, Cape Air Force Base on Umnak Island, $2,450,000; auxiliary air force field at Naknek, $750,000; Air force base on Shemya Island, $2,450,000; Thornbrough Air Force Base, Cold Bay, $2,450,000; buildings, runways, utilities.

Man., Rivers—STORAGE BLDG.—Govt. of Canada, Dpt. National Defence AIR, Cartier Sq., Ottawa, Ont., deferred indefinitely because of steel shortage, armament storage bldg., etc. $400,000. CD 7/9.

LATIN AMERICA

▲ **Mexico, Arraiaga**—Tapachula-Mexican Govt., Sria. de C. y O.P., Mexico City, plans 150 mi. road, $7,000,000.

Mexico, Durango—Ernesto and Manuel Espinosa Iglesias Fortuna, 79, Mexico City, plans by Ing. Ricardo A. Vergara 9, de Febrero, 34, Mexico City, cinema. $500,000.

Mexico, Mexico City—Krause Plow Corp. de Mexico, S. A., Sullivan, 165, Mexico City, plans plow, cultivator, raker, seeder, etc. factory. $750,000.

Mexico, Mexico City—Tuberia Nacional S. A., c/o Lic. Eugenio Morales Mireles, Carranza, 51, Mexico City, plans chilled steel pipe factory. $600,000.

AMERICANS ABROAD

▲ **Israel, Jerusalem**—Hadassah, 1819 Broadway, New York 23, N. Y., U. S. A. and Hebrew University, Jerusalem, plans by Joseph Neufeld, 130 E. 56 St., New York 22, N. Y. U. S. A. medical center, incl. medical and nursing schools and 430-bed hospital, $5,500,000. Bids to be taken in Jerusalem about May 1952.

PUBLIC BUILDINGS

▲ **Ark., Jonesboro**—LIGHT POWER PLANT ADDNS.—City, Jonesboro, city light and power plant addns., $1,000,000. CD 9/1/43.

▲ **Calif., Martinez**—HOSPITAL—Contra Costa Co., Hall of Records, plans by Masten & Hurd, 526 Powell St., San Francisco, 150-bed general hospital, $3,315,000. CD 5/29.

▲ **Conn., Glastonbury**—HIGH SCHOOL—Town, Bd. Educ., Glastonbury, plans by Keith Sellars Heine, 71 Oxford St., Hartford, new high school, 6 year Junior-Senior High School, convert present high school to elementary school, Hubbard St. $1,544,600. CD 3/18/46.

▲ **Conn., Trumbull**—SCHOOL—Town, Bd. Educ., plans by Lyons & Mater, 211 State St., Bridgeport, Conn., school, $1,170,000. CD 12/14/50.

▲ **Del., New Castle**—SCHOOL—New Castle Special School Dist., voted $2,608,000 bonds, 2 school adns., and 1 new school.

▲† **Tex., Mineral Wells**—BARRACKS, etc.—U. S. Eng., 1127 Texas & Pacific Bldg., Fort Worth, barracks, $4,500,000; misc. constr. $4,750,000; mechanical and equip. repair shop, $150,000; warehouse units, $3,000,000; mess halls, $900,000, for Camp Wolters.

▲ **Tex., Richmond**—CELL—Texas State Prison Board, State Bldg., Austin, 300 unit individual cell. $1,000,000.

▲ **Tex., Victoria**—HOUSING—Victoria Housing Auth., Victoria, plans by Jordan C. Ault & Assoc., 604 E. Goodwin Ave., 130 housing units. $1,140,000. CD 5/17.

▲ **Utah, Salt Lake City**—JAIL—Salt Lake Co., c/o County Clerk City and County Bldg., plans by Hal K. Beecher, Dooly Bldg., 5 story county jail, $2,200,000.

▲ **Wis., Milwaukee**—SCHOOL ANNEX—Bd. Vocational & Adult Education, 1051 N. 7 St., Milwaukee, Zone 3, plans by Grassold & Johnson, 734 N. Jefferson St., Milwaukee, Zone 2, 2 story vocational school annex, $1,250,000. CD 8/10/50.

▲ **Wyo., Casper**—HOSPITAL—Matrona County Memorial Hospital, Casper, 200-bed hospital, $1,000,000. Fisher & Fisher, Denver National Bldg., Denver, Colo., consult. engrs. and archts. CD 4/24.

COMMERCIAL BUILDINGS

▲ **Conn., New Haven**—GALLERY ADDN.—Yale University, Derby Ave., plans by Phillip L. Goodwin, 32 E. 57 St., New York, N. Y., art gallery addn., on Chapel St., near corner York St., $1,500,000. CD 5/23/50.

▲ **Fla., Jacksonville**—HOSPITAL—Jacksonville Baptist Hospital, c/o Reynolds, Smith and Hills, archts. and consult. engrs., 227 Park St., Jacksonville, Fla., hospital, Approx. $1,000,000.

Del., Wilmington—STORE—Kennard Pyle Co., 617 Market St., Phila., Pa., plans by G. Morris Whiteside 2nd., Du Pont Bldg., department store. $300,000. CD 12/19/49.

FLA., Tampa—HOSPITAL WING—St. Joseph Hospital 7 Ave and Morgan St., Tampa, children's hospital wing, $300,000.

Ga., Athens—OFFICE—Southern Bell Telephone Co., Hurt Bldg., Atlanta, plans by Shutze & Armistead, Candler Bldg., Atlanta, dial and toll office bldg. Approx. $500,000.

Tex., Dallas—SHOPPING CENTER—Skillern & Sons, Inc., 520 N. Pearl St., masonry shopping center, $432,000.

Tex., Fort Worth—SHOPPING CENTER—Lakeland heights Shopping Center, c/o Lakeland Heights, shopping center $300,000.

▲ **Tex., Galveston**—HOUSING—Allen & Co., 30 Broad St., New York 4, N. Y., housing development, on Pelian Island, $1,000,000.

Tex., Houston—COMMERCIAL—Jack Roach, Jr., 615 Broadway, commercial bldg., Buffalo Speedway and Bissonnet Ave. $400,000.

Tex., Sinton—OFFICE—Plymouth Oil Co., Sinton, plans by E. Dexter Hamon, 912 Ocean Dr., Corpus Christi, 2 story concrete frame and fdn., masonry office, $300,000. F. T. Drought, 117 W. Pecan St. and George R. Rhine, 209 San Pedro St., San Antonio, consult. engrs. CD 6/29.

Alta., Lethbridge—TRAINING SCHOOL—Reverend Sisters of St. Michael, 713 St., Lethbridge, plans by Meach-Mitchell and Meach, MacFarland Bldg., Lethbridge, nurse's training school, $375,000.

Ont., Guelph—HOUSES—Nick Kuhn & Son, 193 Hospital St., Guelph, 30 or more houses in Delhi St. Dist. Approx. $300,000.

Que., Quebec City—PARISH HALL—Roman Catholic Parish of St. Pascal de Maizarets, 1895 Canadiere St., Quebec City, plans by Jean & Dupere, 14 Place d'Aiguillon Quebec City, 1 story 90x138 ft., reinforced-con., brick, parish hall, $350,000.

INDUSTRIAL BUILDINGS

Ark., Blytheville—ELEVATOR—Farmers Soybean Corp., Blytheville, rein.-con. elevator, $300,000.

Ark., Little Rock—FACTORY—Hankins Container Co., 3044 W. 106 St., Cleveland, O., factory, $250,000.

▲ **Ark., Ozark**—GENERATING PLANT—Arkansas Electric Co-operative, Fayetteville, Ark., steam electric generating plant, near here, 544 mi. 69 kv power transmission lines, Franklin Johnson, Logan, Scott Sebastian, Crawford, Pope, Yell, Carroll, Benton, Madison, Boone, Newton, Searcy and Washington Counties, ARK.; Barry, Stone, Taney Counties, Missouri and Leflore, Sequobyn, Adair, Cherokee and Delaware Counties, Okla. and 22 relocated substations, $10,558,000. Burns & McDonnell Eng. Co., 95 and Troost Ave., Kansas City, Mo., consult. engr. CD 2/14.

Conn., Enfield—GENERATING PLANT—Connecticut Light & Power Co., Thompsonville, gas turbine electric generating plant, Main and N. River Sts., $200,000. United Engineers & Constr., Inc., 1401 Arch St., Phila., Pa., consult. engr.

▲ **Conn., Hartford**—FACTORY—The Hartford Electric Steel Corp., 540 Flatbush Ave., project abandoned, factory off Flatbush Ave., $1,000,000. CD 4/10.

Ill., Morton Grove—FACTORY—H. M. Harper Co., Lehigh Ave. 25,000 sq. ft. factory addn. $250,000.

Ind., Hagerstown—PLANT—Perfect Circle Co., Hagerstown, plant, $120,000.

▲ **Kan., Arkansas City**—REFINERY—Kanotex Refining Co., C. M. Boyle, pres., Arkansas City, refinery, $2,300,000.

▲ **N. J., South Plainfield**—RESEARCH CENTER—American Smelting and Refining Co., 19 Nassau St., New York, 5, N. Y., research center on 29-acre tract at Oak Tree Road and Park Ave., $1,000,000.

N. Y., Long Island City—GARAGE, etc.—New York Telephone Co., 140 West St., New York, Zone 7, plans by Voorhees, Walker, Foley & Smith, 101 Park Ave., New York, Zone 17, 1 story, 105x211 ft. garage and office, 9 St. northeast corner 44 Rd. $300,000.

N. C., Elizabeth City—PLANT—Currituck Exchange Potato Handling Co., Elizabeth City, rebuild plant. $100,000.

▲ **O., Cleveland**—PLANT—General Motors Corp., Diesel Engine Dic., 2160 W. 106 St., 200,000 sq. ft. structure on premises. $2,000,000.

Okla., Oklahoma City—PLANT—Hoster Steel Co., 1600 S. May St., plant 9, plans by Fred Hoster, 1600 S. May St., steel mfg. plant. $250,000.

▲ **Pa., Butler**—ANNEALING FURNACES—Armco Steel Co., 1939 Armco Ave., Middletown, O., facility for annealing furnaces for electric steel production. $2,000,000.

Tex., Corpus Christi—PLANT—Borden Co., 1102 Blutcher St., plans by John E. Geiger & Assoc., archts. and consult. engrs., 8426 Weir St., 167x218 ft., structural steel frame, masonry creamery plant, concrete pier and beam fdn. $125,000.

Tex., Dallas—PARKING FACILITIES—Dallas Cotton Exchange, Cotton Exchange Bldg., parking facilities, $737,000.

Tex., Dallas—WAREHOUSE—General Electric Co., 1801 N. Lamar St., warehouse, $232,000.

Tex., San Antonio—PLANT—Petty Geophysical Engineering Co., c/o P. J. Rudolph, mgr., 317 6th St., plant, incl. laboratories, on 530 acre site off Blanco Rd. $400,000.

Vt., Ludlow—PLANT—General Electric Co., 570 Lexington Ave., New York, N. Y. plant for jet engine parts. $300,000.

Va., Arlington—SERVICE STATION—Shen-Valley Corp., Arlington, Va., service station. $175,000.

Wash., Seattle—WAREHOUSE—Western Electric Co., 195 Broadway, New York, N. Y., 225x250 ft., 2 story rein.-con. warehouse $750,000.

W. Va., Glendale—PLANT—Wheeling Metal Products Corp., Wheeling, W. Va., 162x202 ft., steel frame, brick, block mfg. plant, $250,000.

▲ **Man., Selkirk**—MILL EXPANSION—Manitoba Rolling Mill Co., Ltd., 845 Logan Ave., Winnipeg, 70x420 ft., and 70x200 ft., bldgs., for rolling mill expansion $1,000,000.

Man., Winnipeg—SERVICING DEPOT—North Star Oil Ltd., Ellice Ave., service depot, Centre St. $100,000.

▲ **Ont., Niagara Falls**—PLANT—North American Cynamid, Ltd., 1 Fourth Ave., expansion program, incl. large furnace, liquid air equipment and other facilities to increase production. $4,000,000.

Ont., Sarnia—PLANT, etc.—Hobbs Glass Ltd., 116 Talfourd St., Sarnia, plans by N. B. Forbes, 197 Christina St., N., Sarnia, 60 x 100 ft., concrete block, brick, steel plant and office on Front St. north of George St. Approx. $100,000.

Ont., Sarnia—LABORATORY—Polymer Corp., Ltd., No. 40 Hy., research laboratory. $400,000.

UNCLASSIFIED

▲ **Colorado** — DISTRIBUTION LINES — Yampa Valley Electric Assn., Steamboat Springs, 345 mi. electrical distr. lines, 36 miles of new tie lines, substations, etc. 36G-H Routt, $2,900,000.

Idaho—RURAL DISTRIBUTION LINES—Fall River Rural Electric Co-operative, Ashton, Idaho, 10 miles of rural distr. lines, 25 mi. transmission lines 1 mi. tie line substations, two way radio and completion of previously approved construction. $360,000. C. C. Davidson, c/o owner, Ashton, consult. engr. CD 9/2/48.

Idaho—RURAL DISTRIBUTION LINES—Northern Lights, Inc., Sandpoint, Idaho, 45 mi. distr. lines, acquisition of 6 mile lines, additional headquarters facilities, two way radio, Bonner Co., $240,000. H. A. Sewell, Newport, Wash., consult. engr.

Iowa—RURAL DISTRIBUTION LINES, etc.—Glidden Rural Electric Co-operative, Glidden, 40 mi. rural distr. lines, 24 mi. tie lines, sub-stations, Carroll Co. $310,00. Stanley Eng. Co., Hershey Bldg., Muscatine, consult. engr.

▲ **Kansas**—RURAL TELEPHONE LINES—Pioneer Telephone Assn., Ulysses, exten. and imprvs. rural telephone lines, Hamilton, Stanton, Grant, Haskell, Stevens, Kearney, Finney and Morton Counties, $1,089,000.

▲ **La., New Orleans**—GRAIN ELEVATOR WHARF—Port of New Orleans Comrs., Dauphine St., grain elevator wharf at Napoleon Ave. landing, $3,500,000.

▲ **Massachusetts** — GAS PIPE LINE — Algonquin Gas Transmission Co., Box 361, Back Bay Annex, Boston, natural gas pipe line, pipe line and facilities. $27,500,000. Ford Bacon & Davis, Inc., 39 Broadway, New York, N. Y., consult. engr. CD 3/5.

Missouri—RURAL DISTRIBUTION LINES—North Central Missouri Electric Co-operative, Milan, 170 mi. rural distr. lines, 17 mi. tie lines and communication facilities, Sullivan Co. $345,000. Frank Horton & Co., Lamar, consult. engrs. CD 8/2/49.

▲ **Okla., Wagoner**—RESORT FACILITIES—Bd. of Resources, Capitol, Oklahoma City, Zone 5, lodges, cabins and resort facilities at Fort Gibson Reservoir near here. $2,000,000. Clarence Burch, c/o owner, engr.

▲ **Texas**—PUMPING STATIONS, etc.—Ranch Pipe Line System, c/o Shepp Pipe Line Corp., Shell Bldg., Houston, Tex., pumping stations at McCamey, $275,000; El Dorado, $225,000; LaGrange, $300,000; Genoa, $250,000 on 477 mi. line between McCamey and Houston; oil and products storage farm at McCamey, $500,000. CD 7/17.

▲ **Texas**—OIL PIPE LINE—Rancho Line, (Trade name), McCamey, Tex., 477 mi. 24 in. welded joint crude oil pipe line carrier from vicinity McCamey to Houston, Tex. ship channel, via Eldorado, LaGrange, Genoa, Pasadena, Harrisburg, Deer Park, Upton Co. $36,500,000.

Tex., San Antonio—SWIMMING POOL—City, City Hall, Military Plaza, 2 rein.-con. municipal swimming pools, 1 at East End, $60,000; other at Highland Park, $60,000. T. Coghill, city engr. CD 8/8/49.

† **Tex., Mineral Wells**—LIGHTING etc.—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, outside lighting, $90,000; gas sys., $65,000, for Camp Wolters.

Tex., Silsbee—OIL PIPE LINE—American Republics Village Mills, Silsbee, 40 mi. 6 in. crude oil pipe line from field to recycling plant, $320,000.

▲ **Ont., Sarnia**—DOCK, etc.—Chesapeake & Ohio R. R., L. T. Nuckols, ch. engr., General Motors Bldg., Detroit, 2, Mich., slip dock and apron on St. Clair River for resumption freight car ferry service between Sarnia and Port Huron, Mich., and new Marshalling yards, $1,500,000.

P. E. I., Charlottetown—Dpt. P. Wks., Ottawa, Ont., harbor imprvs. at Savage Harbour. Approx. $130,000. R. Blais, c/o owner, engr.

CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BUILDINGS

BIDS ASKED

Mass., Waverly—HOSPITAL—B.A. 8/9—State, Dpt. Mental Health, 15 Ashburton Place, Boston, hospital for feeble minded at Walter E. Fernald School, Proj. M-214. CD 7/25.

Mass., Wrentham—SERVICE BLDG., ETC.—B.A. 8/10—State, Dpt. Mental Health, 15 Ashburton Place, Boston, M 217 and M 220, Contr. 1, service bldg. and warehouse addns., alterations, $300,000. Plans deposit $25 refundable, S. S. Eisenberg, 69 Summer St., Boston, archt., Cleverdon Varney & Pike, 120 Tremont St., Boston, engrs.

† **Mass., Waltham**—NURSES QUARTERS—B.A. 8/14—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, rehabilitation nurses quarters, Murphy Army Hospital, Eng. 19-016-52-1. CD 8/5/49.

▲ **Mass., Worcester**—SCHOOL—B.A. 8/16—City, School Dpt., Chandler Street Junior High School, $1,800,000. Extended date. CD 7/17.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MAINE—State Hy. Comn., Augusta,

Warren Bros. Roads Co., 38 Memorial Dr., Cambridge Mass. CA **$59,578.** bit.-con. 2.88 mi. Q Farmingdale and Gardiner, Maintenance Proj. 472, Bids July 18.

NEW HAMPSHIRE—Dpt. P. Wks. and Hys., Concord, N. H.

P. E. Susi & Co., Pittsfield, Me., LB. **$408,130.** grading, drainage, surf. treated gravel 4.11 mi. N.H. 116 in towns of Littletcn and Bethlehem, Grafton Co. Bids July 19. CD 7/11.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. Pub. Wks., 100 Nashua St., Boston, rejected bids June 12. Contr. C-2, steel superstructure, Central Artery, Boston, L. B. **$6,262,512.** CD 6/21 under LB.

MASSACHUSETTS—Mystic River Bridge Auth., Admin. Bldg., Boston,

Berke Moore, Inc., 8 Newberry St., Boston, Mass. CA **$123,134.** steel frame, footing for two bents, alterations, Mystic River Bridge, Boston approach, Charlestown. J. E. Griener Co., 1208 St. Paul St., Baltimore, Md., engrs. CD 3/10/47.

Frank Ciaraldi, 28 Cantillion St., Lawrence, Mass. LB **$144,112,** grading, concrete fdns., clearing site for housing Proj. PHA 10-2, LAWRENCE, MASS. Lawrence Housing Auth., 56 Melvin St., Lawrence, Mass. CD 7/9 under public bldgs.

Thomas Bros., 267 Wareham St., Middleboro, Mass. LB **$60,252.** rehabilitation of New Bedford Airport, NEW BEDFORD, MASS. City, Airport Comr., New Bedford, Mass. Bids July 17. CD 7/9.

Callan Constr. Corp., 539 Hope St., Bristol, R. I. LB. **$128,020,** Contr. 6, pumping station and water mains, EAST PROVIDENCE, R. I. Town, Bd. Water Comrs., Hunts Mill Rd., West Providence, Bids July 18. CD 7/11.

CONNECTICUT—State Hy. Comn., Hartford, Conn.

Mariani Constr. Co., 222 Forbes Ave., New Haven, Conn., LB, Alt. A, **$369,085,** B, **$644,017,** grading, drainage 5.034 lin. ft. Route 1, constr. grade separate structures on Townsend Ave.-Line C & E approaches, New Haven and East Haven. Bids June 18. CD 6/8.

BUILDINGS

LOW BIDS AND CONTRACTS

John Capobianco, 44 School St., Boston, Mass. LB **$835,000.** elementary and high SCHOOL addn., alterations, Asbury and Union Sts., HAMILTON, MASS. Town, 14 Union St., Hamilton, Mass. Bids July 19. CD 7/9.

Canter Constr. Co., 185 Corey Rd., Brookline, Mass. CA **$565,000.** SANATORIUM addn., alterations, POCASSET, MASS. Barnstable County Sanatorium, Pocasset, Mass. CD 7/10 under LB.

Vueno Constr. Co., 217 Bedford St., Stamford, Conn., CA, **$335,000,** CHURCH, DARIEN, CONN. Noroton Presbyterian Church, M. Baker, chn. Bldg. Comn., Darien, Conn., Nelson L. Page, Mansfield Ave., Stamford, assocs. acht. and Arland A. Diriam, 673 Boylston St., Boston, Mass., archt. CD 3/16/49.

Jos. E. Kelly Co., Front Ave., New Haven, Conn., CA. **$500,000,** concrete block FACTORY, MILFORD, CONN.

▲ **Wadhams & May Co.**, 15 Lewis St., Hartford, Conn., CA. **$1,058,880,** New Chamberlin Elementary SCHOOL, NEW BRITAIN, CONN. City, Supt. of Schools, New Britain Conn. Bids July 12. CD 7/20, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

Pa., Pottstown—B.A. 8/15—State Dpt. Property & Supplies, 1400 N. 9 St., Harrisburg, const. access roadway and parking lot at Pottsgrove Manor. Plans deposit $5. G. Edwin Brumbaugh, Gwynedd Valley, archts., W. B. Jeffris, c/o owner, ch. engr.

Pa., Washington—B.A. 8/15—State Dpt. Property & Supplies, 1400 N. 9 St., Harrisburg, addnl. embankment and correct driving field at Washington State Police Barracks. Plans deposit $5. W. B. Jeffris, c/o owner ch. engr.

BIDS ASKED—BUILDINGS

N. J., River Edge—SCHOOL—B.A. 8/6—Bd. Educ., 910 Bogert Road, River Edge, elementary school on Midland Ave. Cherry Hill Elementary School addn., $365,000.

N. Y., Lake George—SCHOOL—B.A. 8/6—Bd. Educ., Lake George Central School Dist., Lake George, Central School addn.

N. Y., Queens Village—STAFF HOUSING—B.A. 8/8—Bureau Contracts & Accounts, Albany, staff housing, Bldgs. No. 48, 49, and 50 at Creedmore State Hospital. Plans deposit $15.

N. J., Newark—SCHOOL ADDN.—B.A. 8/13—Bd. Educ., 31 Green St., Newark, Cleveland High School addn., at 392 Berjen St., $325,000. Dayton Street School addn.

N. Y., Salisbury—STORAGE—B.A. 8/14—Nassau County Bd. Supervs., Old County Court House, Franklin Ave., Mineola, storage and maintenance.

N. Y., Brookville—SCHOOL—B.A. 8/15—Bd. Educ., Union Free School Dist. No. 3, Twp. of Oyster Bay, Brookville School, Brookville School addn., Wilbur Hollow Rd.

Pa., Cambridge Springs—HIGH SCHOOL—B.A. 8/16—School Dist. of Area VI, Crawford Co., Cambridge Springs, 2 story brick, block Junior-Senior High School. $850,000. Plans deposit $20. Freeburg & Lindquist, 16 E 4 St., Jamestown, N. Y., archts. CD 11/10.

N. J. Wayne Twp.—FACTORY, etc.—Bids Asked—Stylon Corp., c/o J. Thomas Camlet, archts. and engrs., Hughes Bldg., 667 Main Ave., Passaic N. J., 1 story 150x400 ft., brick, concrete block ceramic tile factory and 45x60 ft. office, $350,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, **Matthew DeGroot**, Jericho, Vt., LB. $251,969. est. $266,000. 0.13 mi. Oxford Village Bridge, Main, Clinton and Washington Sts., S.H. 9293, Oxford-Soldiers Home, S.H. 5623, FARC 51-55, Chenango Co.

S. A. Scullen Co., Box 362, Waterford, N. Y. LB **$798,631.** est. $976,000. 0.99 mi. separation of grades of New York Central R. R., with Wyatts-Hoffman, S.H. 5110, FGRC 51-46, Schenectady Co. Bids July 25. CD 7/10. under Streets and Roads.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State office Bldg., Albany,

V. J. Costanzi, Inc., 130 North Rd., Poughkeepsie, N. Y. LB. **$91,720,** est. $108,000. 8.61 mi. Catskill Thruway-CT 40-1, Saugerties-Greene county line; Ulter county line, Brick Schoolhouse Rd., CT 51-2, Ulster and Greene Counties;

Camarco Contractors, Inc., Box 85 Carmel, N. Y., LB. **$389,826.** est. $401,000. 1.7 mi. Kent Cliffs-Carmel, FASH 51-6, Putnam Co.

Howard & Sprague, 656 State St., Binghamton, N. Y. LB. **$695,695.** est. $815,000. 0.57 mi. Bainbridge-Masonville, Pt 1 and 1A, FASSH 50-15, FASSH 51-1, FASSh 51-2P, Chenango Co.;

Bruno J. Caradori Const. Co., Lancaster, N. Y. LB. **$249,296.** est. $280,000 5.5 mi. Andes-Margaretville S.H. 8017, FARC 51-53, Delaware Co.;

Collins-Forrestel Corp., Hornell, N. Y. LB. **$1,528,712.** est. $1,616,000. 9.56 mi. Dansville-Mt. Morris, Pts. 1 and 2, S.H. 714-715, FARC 51-45, Livingston Co.;

Arute Bros. Inc., 560 S. Main St., New Britain Conn., LB. **$842,519.** est. $924,000. 5.46 mi. Victory-Red Creek Pt 1, SH 8048, Victory-Cato S.H. 1174, Victory-Cato, Pt 1, FARC 51-36, FASSH 51-5, Cayuga Co.;

Asphalt Roadways Co., 1766 Main St., Buffalo, N. Y. LB, **$276,551.** est. $300,000. 3.71 mi. Southwestern Blvd. S.H. 9269, FARC 51-54, Erie Co. Bids July 25. CD 7/10.

Square Constr. Co. 115 S. Haven St., Baltimore, Md. LB **$729,600.** Mt Royal transmission main 13,500 ft. precast 48 in. concrete water main, BALTIMORE, MD. City, Bureau Water Supply, 503 Municipal Bldg., Baltimore 2, Md. Bids July 18. CD 7/5.

Davis Constr. Corp., Charlotte Ave., Hicksville, N. Y. LB. **$203,938,** furnishing, placing, compacting erosion control fill, placing, compacting fill north of Runway B Contr. NYA-140.007,

MacAsphalt Constr. Corp., 33-15 Lawrence St., Flushing, N. Y., LB. **$49,717,** reconstruct access roads to terminal area, Contr. NYA160-003, at New York International Airport, IDLEWILD, N. Y. Port of New York Auth., 111, 8th Ave., New York 11, N. Y. Bids July 18. CD 7/10.

▲ **Horn Constr. Co.**, 2174 Hewlett Ave., Merrick, N. Y., CA. **$2,068,000.** foundations for Bronxdale HOUSES, Proj. NY 5-22 in area bounded by Watson, Leland, and Soundview Aves., and Bruckner Blvd., NEW YORK, N. Y. New York City Housing Auth., 63 Park Row, New York 38, N. Y. Bids June 21. CD 6/15.

▲ † **D. W. Winkelman Co. Inc.**, 205 Harrison St., Syracuse, N. Y., CA. **$3,338,500.** addnl. facilities at Niagara Falls Air Force Base, NIAGARA FALLS, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. CD 3/29.

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John B. Pike & Sons, Inc., 1 Circle St., Rochester, N. Y. CA. **$299,700.** rehabilitation and construction projects, Naval Industrial Reserve Ordnance Plant No. 2, Navy 28199, Spec. 29853. ROCHESTER, N. Y. Pub. Wks. Office, Third Naval Dist., 90 Church St., New York 7, N. Y. Bids June 25. Awarded June 27.

Nassau Constr. Co. Inc., and **Frank Mascali & Sons, Inc.**, 69-34 51 Ave., Woodside, N. Y., CA. **$100,900.** replacement of sidewalks, resurf. roadway and provision of parking areas, Naval Hospital, Noy 28200. Spec. 29854 ST. ALBANS, N. Y. Pub. Wks. Office, Third Naval Dist., 90 Church St., New York 7, N. Y. Bids June 27. Awarded June 29.

† **Delta Electric Inc.**, and **County Asphalt, Inc.**, 38 Winchester Ave., White Plains, N. Y., CA **$616,446,** electrical utilities extens. at United States Military Academy, WEST POINT, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y.

▲† **Hendrickson Bros.**, 63 N. Central Ave., Valley Stream, N. Y., CA **$2,363,289.** airfield facilities at Suffolk County Air Force Base, Eng 30-075-51-673. WESTHAMPTON, N. Y. U. S. Eng., 80 Lafayette St., New York 7, N. Y. bids About 6/21. CD 6/5.

NEW JERSEY—State Hy. Dpt., State Office Bldg., Trenton, N. J.

Franklin Contg. Co., 12 Central Ave., Newark, N. J., LB **$127,019,** wid'n. Route 6 (Section 9B) and constr. northwest ramp of Valley Road, Clifton, Passaic Co. Bids July 17. CD 6/29.

† **Horn Constr. Co. Inc.**, 2174 Hewlett Ave., Merrick, N. Y., CA, **$251,500,** rehabilitation of railroad classification yard, Naval Supply Depot, NOY 27218, Spec. 29189. BAYONNE, N. J. P. Wks. Office, Third Naval Dist., 90 Church St., New York, 7, N. Y. Bids June 20, awarded June 29.

† **Speerin, Preston & Burrows, Inc.**, 50 Church St., New York, 7, N. Y., CA, **$293,000,** addnl. storm damage repairs Naval Ammunition Depot, Spec. 29829, NOY 28175 EARLE, N. J. P. Wks. Office, Third Naval Dist., 90 Church St., New York, 7, N. Y. Bids June 22, awarded June 25. CD 6/13.

† **Wagner-Larsen Constr. Co.**, 159 West St., Brooklyn 22, N. Y., CA, **$194,835,** resurfacing deck of Pier 2, replacement of rail, NOY 22768, Spec. 25296, EARLE, N. J. P. Wks. Office, Third Naval Dist., 90 Church St. New York, 7, N. Y. Bids Apr. 26, awarded June 21. CD 4/13.

H. K. Ferguson Co., 19 Rector St., New York 6, N. Y., CA $500,000, applications research LABORATORY, EDGEWATER, N. J. Allied Chemical & Dye Corp., Barrett Div., 40 Rector St., New York 6, N. Y.

PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg, Pa.,

Rochester Coal Trucking & Contrg. Co., 481 Harmony Ave., Rochester, Pa., LB. **$163,967,** plain c. conc. base with bit. surf. and repair 5,451 ft., T.R. 18-930, Beaver Co.

Rupp Bros., Box 230, Kittanning, Pa., LB. **$145,558.** crushed aggregate base and bit. surf. 8,911 ft. T.R. 68, Butler Co.

C. F. Goeringer Const. Co., 73-75 E. Market St., Wilkes-Barre, Pa., LB. **$111,050.** plain c. conc. base and bit. surf. 6,285 ft. L.R. 40033 (8), Luzerne Co.;

Burrell Const. & Supply Co., New Kensington, Pa., LB. $139,733. wid'n. 17,653 ft. roadway with granulated slag base and bit. surf. T.R. 80, Westmoreland Co.; Black Top Paving Co., Oakland Ave., Washington, Pa., LB. **$376,977.** build up and wid'n, 22,751 ft. with crushed aggregate base and bit. surf. T.R. 71, Westmoreland Co.;

A. F. Moreau & Sons, Inc., 225 College Ave., Indiana, Pa., LB. **$149,822.** surf. 16,462 ft. existing pavement with bit. surf. and build-up with crushed aggregate base, T.R. 56, Westmoreland Co. Bids July 20. CD 6/20.

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg,

rejected bids July 20, crushed aggregate base, bit. surf. roadway 8,911 ft. T.R. 68, Butler Co. L.B. **$145,558;** plain c.conc. base with bit. surf. and repairs 5,451 ft. T.R. 18-930, Beaver Co. L.B. **$163,967;** bit. surf. 6,695 ft. existing roadway, T.R. 88, Allegheny Co. L.B. $56,527. Will re-advertise. CD 7/25. under LB.

Dpt. Property & Supplies, 1400 N. 9 St., Harrisburg, Pa., rejected bids July 11, construct Virgin Run Lake and Dam, Fayette Co. L.B. **$93,995;**

repairs to Reining Pond Dam, Wayne Co. L.B. **$46,850;** repair and replacement of Big Spring Dam, Cumberland Co. L.B. **$84,300;**

repairs and enlargement at Duman Lake Dam, Cambria Co., L.B. **$63,438.** PENNSYLVANIA. CD 7/19. under LB.

Trimper Constr. Co., Ocean City, Md. LB **$43,260.** constr. 3 timber jetties, into Atlantic Ocean, treated timber road protection, Ocean City, Worcester Co., MARYLAND. State Rds. Comn., 108 E. Lexington St. Baltimore 2, Md. Bids July 17. CD 7/5.

MARYLAND—State Rds. Comn., 108 Lexington St., Baltimore, Zone 2,

W. E. Graham & Sons, Cleveland, N. C. CA **$964,758.** grading, drainage surf. 4.545 mi., along Columbia-Atholton-Scraggsville Rd., beginning point approx. 0.7 mi. northeast of Atholton, extend. southwesterly to point approx. 0.8 mi. southwest of Scraggsville, Constr. HO 218-5-315, Howard Co., CD 6/19 under LB.

Intercounty Constr. Co., 4720 Baltimore Ave., Hyattsville, Md. CA **$62,647.** Contr. 974, Sect. 111. water main and sewer, Wheaton Woods, HYATTSVILLE, MD. Washington Suburban Sanitary Comn., 4017 Hamilton St., Hyattsville, Md. Bids July 16. Harry R. Hall, engr.

Washington Engr. & Constr. Co., Oakland and Penna. Sts., Washington, Pa., CA. Approx. $303,000. 2 story bsmnt., 60x103 ft., brick grade SCHOOL addn., near CHARLEROI, PA. School Dist. Fallowfield Twp., Charleroi, Pa. Bids July 12. CD 6/29.

Mathew Leivo & Sons, Lawrence Saving & Trust Bldg., New Castle, Pa., CA. Approx. **$85,000.** 1 story 80x 160 ft., brick REFRACTORY addn., NEW CASTLE, PA. New Castle Refractories Co., New Castle, Pa.

Oil City Machine & Tool Co., 420 Seneca St., Oil City, Pa., Owner builds. Approx. **$100,000.** 1 story 322x 365 ft., brick, tile MACHINE SHOP, OIL CITY PA.

Navarro Corp., 6219 Broad St., Pittsburgh, Pa., CA. Approx. **$500,000.** 3 story bsmnt., T-shaped 37x196 ft. and 26x38 ft., brick, concrete COMMUNITY HOUSE, PITTSBURGH, PA. Duquesne University, Bluff St., Pittsburgh, Pa., CD 7/13.

Arundel Constr. Co., 4420 E. Eager St., Baltimore, Md. LB **$107,332.** Contr. 1140, sheet asph., resurf.; **Potts & Callahan Contg. Co., Inc.**, 500 W. 29 St., Baltimore, Md. LB **$94,368.** Contr. 1141, sheet asph. resurf., bit. -con. surf., BALTIMORE, MD. City, Bureau Hys., 303 Municipal Bldg., Baltimore 2, Md. Bids July 18. CD 7/12.

▲ **Leo Butler Co.**, College Park, Md., LB, **$1,934,488,** intercepting sewer C, WILMINGTON, DEL. City, Street and Sewer Dpt., City Hall, Wilmington, Del. Bids July 10. CD 6/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Jackder Constr. Co.**, 16 Court St., Brooklyn 2, N. Y. CA. Approx. **$2,000,000.** Co-operative garden APARTMENT for 288 families, on E. 7 St. between Avenues V and Z, BROOKLYN, N. Y. Lincoln Gardens Apartments, c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn 2, N. Y.

▲ **Brookville-Vanderbilt Corp.**, 1527 Franklin Ave., Mineola, N. Y., Owner Builds. **$1,500,000** 40 HOUSES on 100 acre site on Cedar Swamp Rd., BROOKVILLE, N. Y.

▲ **Elmwood Gardens**, c/o Stanley H. Klein, archt., 89-31 161 St., Jamacia, N. Y., Owner Builds. $1,300,000. 104 HOUSES, 25 acre tract at Hempstead Turnpike, EAST MEADOW, N. Y.

Salisbury Park Homes, c/o Alwin Cassens, Jr., archt., 116-55 Queens Blvd., Forest Hills, N. Y. Owner Builds. **$660,000.** 60 HOUSES on old Lowden farm site, EAST MEADOW, N. Y.

▲ **Harry L. Osias**, 233 Broadway, New York 7, N. Y. Separate Contracts. **$1,000,000.** four 6 story APARTMENTS, 67 Rd. west of Yellowstone Blvd., FOREST HILLS, N. Y. CD 2/21.

Harry L. Osias, 233 Broadway, New York 7, N. Y. Separate Contracts. **$672,000.** 6 story 100x200 ft. APARTMENT, 35 Ave. between 79 and 80 Sts., JACKSON HEIGHTS, N. Y. CD 2/21.

▲ **Harry L. Osias**, 233 Broadway, New York 17, N. Y. Separate Contracts, 6 story 100x160 ft. APARTMENT, Hoover and 82 Dr., 138 St., **$588,000;** 6 story 98x200 ft. apartment, 84 Rd. and Smedley St., **$546,000;** 6 story 85x200 ft. apartment, 134 St. between Hoover and 82 Aves., **$504,000;** 6 story 100x160 ft. apartment, 135 St. between Hoover Ave. and 82 Dr., **$588,000;** 6 story 80x200 ft. apartment, 83 Av., between Hoover and 83 Aves., **$588,000;** 6 story 100x160 ft. apartment, 138 St. between Hoover Ave. and 82 Dr., **$588,000;** 6 story 85x300 ft. apartment, 135 St. between Hoover and 83 Aves., **$882,000;** 6 story 88x200 ft. apartment, 135 St. between Hoover Ave. and 82 Dr. **$504,000.** JAMACIA, N. Y. CD 2/16.

Harry Osias, 233 Broadway, New York 7, N. Y., Separate contracts. **$546,000.** 6 story APARTMENT, 83 Ave. and 135 St., KEW GARDENS, N. Y. CD 3/1.

▲ **Paul Tishman Co. Inc.**, 595 Madison Ave., New York, N. Y., CA. **$12,248,000.** Edenwald HOUSES in area bounded by Granada Pl., Baychester Ave., Schieffin Ave., E. 225 St., and Laconia Ave., NEW YORK, N. Y. New York City Housing Auth., 63 Park Row, New York 17, N. Y. Bids June 19. CD 5/28.

▲ **Fair-Chester Builders, Inc.**, Depot Plaza, Pleasantville, N. Y., CA. Approx. **$1,000,000.** OFFICE addn., PLEASANTVILLE, N. Y. Readers Digest Assn. Inc., Lawrence Farms, Pleasantville, N. Y., Theodore Richards, 31 Mamaroneck Ave., White Plains, N. Y. archt.

▲ **North Shore Ranch Homes**, c/o Alwin Cassens, Jr., archt., 116-55 Queens Blvd., Forest Hills, N. Y. Owner builds. **$1,300,000.** 100 HOUSES, Middle Neck Rd. and Harbor Hill Dr., PORT WASHINGTON, N. Y.

Harry L. Osias, 233 Broadway, New York 7, N. Y., Separate contracts. **$924,000** 6 story APARTMENT, 64 Rd. and 102 St., REGO PARK, N. Y. CD. 2/21.

▲ **Seaford Oaks Homes**, c/o Matern & York, archts., 90-04 161 St. Jamaica, N. Y., Owner Builds. Approx. **$2,800,000.** 200 HOUSES on tract at Washington Ave. north of Sunrise Hy. SEAFORD, N. Y.

▲ **Wantagh Oaks Homes**, c/o Wechsler & Schimmenti, archts., 17 E. 42 St., New York 17, N. Y. Owner Builds. approx. **$3,500,000.** 172 HOUSES on 44 acre site at Jerusalem Ave., east of Wantagh Ave. WANTAGH, N. Y.

▲ **Durham Terrace Homes**, c/o Erwin Gerber, archt., 1180 Raymond Blvd., Newark, N. J., Owner Builds. **$1,500,000.** 179 HOUSES on 45 acre tract near Bethlehem, HELLERTOWN, PA.

▲ **Henry A. Knoll, Inc.**, 2107 N. Charles St., Baltimore, Md. CA **$1,608,900.** est. $1,609,000. 1 and 2 story, 100x150 ft., 64x140 ft., 64x214 ft., 150x250 ft. brick, steel, concrete Aberdeen Junior Senior High SCHOOL, ABERDEEN, Md. Harford Co. School Bd., Courtland St., Bel Air 1, Md. Bids June 26. CD 6/8.

▲ **Johns Hopkins University**, Homewood Campus, Baltimore 18, Md. rejected bids Jan. 14. 2 story, bsmnt., brick, steel, limestone Alfred Jenkins Shriver Lecture Hall, BALTIMORE, MD. $1,395,680. Revising plans. CD 1/9.

Wm. T. Lyons, Co., Inc., Tower Bldg., Baltimore, Md. LB **$812,520.** 1 story, concrete block, brick, steel county HOSPITAL, PRINCE FREDERICK, MD. Calvert County Hospital, Inc., Prince Frederick, Md. Bids July 10. CD 7/10.

SOUTH

BIDS ASKED—BUILDINGS

N. C., Elizabeth City—SCIENCE BLDG.—B.A. 8//—Elizabeth City State Teachers College, c/o A. J. Maxwell, Jr., archt., Borden Bldg., Goldsboro, science bldg. Aug 2, 1951.

N. C., Newton—HIGH SCHOOL—B.A. 8/7—Catawba Co., Newton, Fred T. Foard High School. Clemmer & Horton, Hickory, archts. CD 10/4/49. . .

Fla., Miami Beach—CHURCH—B.A. 8/8—All Souls Episcopal Church c/o John E. Petersen & Frank H. Shumn, archts., 206 Roper Bldg., Miami, Fla., church. CD 4/26.

N. C., Raleigh—LIVESTOCK BARN—B.A. 8/8—State, Fair Grounds, Raleigh, livestock barn at State Fair. Holloway-Weber-Reeves, 1916 Hillsboro St., archts.

La., New Orleans—SCHOOL—B.A. 8/9—At office Wogan & Bernard, archts., Pere Marquette Bldg., 2 story, brick, steel, limestone 29,234 sq. ft. preparatory school for Sisters of the Blessed Sacrament, 818 Dufossat St. CD 7/16.

Miss., Columbus—SCHOOL—B.A. 8/9—Columbus Separate School Dist., Frisco City Elementary School, Plans deposit $30, Johnston, Jones & Reynolds, West Point Rd., Starkville, archts. CD 5/18.

Fla., Vero Beach—SCHOOL ADDNS.—B.A. 8/11—Indian River County Bd. P. Instruction, Vero Beach, Fla. high school addns., alterations. Duncan, Stewart & McVoy, Arcade Bldg., Vero Beach, Fla., archts.

† **Ga., Camp Stewart**—MESS HALLS—B.A. 8/13—Purch. and Contg. Office, Camp Stewart, Hinesville, Ga., rehabilitation of mess halls, near Hinesville.

N. C., Raleigh—GREENHOUSE IMPRVS.—B.A. 8/14—North Carolina State College Agriculture & Engineering, J. G. Vann, bus. mgr., Raleigh, N. C., greenhouse imprvs., Bids June 14 rejected. CD 7/3, under LB.

Tenn., Lenoir City—B.A. 8/14—City, Lenoir City High School addns. and alterations. Plans deposit $100. Bauman & Bauman, 813½ Market St., Knoxville, archts.

Fla., Flagler Beach—B.A. 8/15—Town, Flagler Beach, waterworks plant and distr. sys., $50,000. Bostwick Inc., Daytona Beach, Fla., engr.

† **Fla., Tampa**—COMMUNICATIONS FACILITIES—B.A. On or About 8/15—U. S. Eng., P. O. Box 4970, Jacksonville, Fla., relocation of radio communications facilities MacDill Air Force Base, Serial No. Eng. 08-123-52-22. CD 3/15.

La., New Orleans—CHURCH—B.A. about 8/15—St. James Major Church, Gentilly Blvd. between Franklin Ave. and Wisteria St., church, $300,000, Wm. R. Burk, Pan American Bldg., archt. CD 7/12.

Va., Petersburg—FACULTY APARTMENTS—B.A. 8/15—Virginia State College, Petersburg, faculty apartments, J. Binford Walford & O. Pendleton Wright, 103 E. Cary St., Richmond, archts.

Fla., Keystone Heights—POWER PLANT ADDNS.—B.A. 8/16 Clay Electric Co-operative, Keystone Heights, electric power plant addns. E. P. McLean Eng. Co., 816 S. Main St., Moultrie, Ga., engr.

N. C., Charlotte—SCHOOL—B.A. 8/16—Bd. School Comrs., J. M. Dunlap, bus. mgr., City Hall, Double Oaks School. Plans deposit $40 general constr. $20 each mechanical. A. G. Odell, Jr. & Assoc., 109 W. 3 St., archts. CD 6/7, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

VIRGINIA—State Hy. Dpt., Richmond,

E. F. Blankenship Co., 1308 Main St., W., Salem, Va., LB. **$201,121,** 335 ft. bridge over Hoiston River and N & W. R.R. with 0.71 mi. approaches between Damascus and Abingdon, U. S. 58, Washington Co. Bids July 5. CD 4/18/49.

VIRGINIA—State Hy. Dpt., Richmond,

Robertson-Henry Co., Inc., Huntington, W. Va., LB. **$482,412** macad. paving 2.84 mi. U. S. 11, for divided highway between Lexington and Fairfield, Rockbridge Co.;

Moore Bros., Staunton, Va., LB. **$96,008,** macad. paving 2.02 mi. U.S. 15 north of Keysville, Prince Edward and Charlotte Counties.

James P. Dillard, 1603 Winder St., Richmond, Va., LB. **$143,967,** stabil. base 5.06 mi. route 33 between Harmony Village and Cooks Corner on the Saluda-Greys Point Hy., Middlesex Co.

W. E. Graham & Sons, Cleveland, N. C., LB. **$150,033,** macad. paving 1 mi. U. S. 52 10 mi. south of Hillsville, Carroll Co.;

McDowall & Wood, 1308 Main St., W., Salem, Va. LB. **$185,206,** stabil. base, hard surfaced 4.11 mi. Route 42, from the Bland county line west, Smyth Co.

Alley Const. Co. Bristol, Va., LB. **$73,104,** wid'n. and paving 0.53 mi. U.S. 19 and Alt. 58, in Abingdon, Washington Co.;

Thompson-Arthur Const. Co., Danville, Va., LB. **$103,568,** stabil. base, hard surfaced and 54-ft bridge over Gravelley Run south of Petersburg, 4.3 mi. Secondary routes 605 and 670, Dinwiddie Co.

A. C. Shearer, Chapel Hill, N. C., LB. **$66,771,** soil cement base, hard surfaced 3.18 mi. Secondary Routes 644 and 645, between Volens and Nathalie, Halifax Co.

Echols Bros., Inc., Staunton, Va., LB. $76,385, stabil. base, hard surfaced 3.82 mi. Secondary Route 600 between Gainesboro and Siler, Frederick Co.

W. H. Scott, Franklin, Va., LB. $111,760, soil cement hard surfaced and 143 ft. bridge 3.96 mi. Secondary route 716 near Dryburg, Halifax Co.

Adams & Tate Const. Co., 2725 Roanoke Ave., Norwich, Roanoke, Va., LB. $81,300. bit. surf. 9.55 mi. Route 80 between the Kentucky line and Haysi, Buchanan and Dickenson Counties;

received no bids July 5, stabil. base and two bridges one 44 ft. long over Aylett Creek and one 87 ft. long over Fox Mill Run, east and west of Aylett, 0.47 mi. Secondary Route 600, King William Co. CD 4/8/49.

▲ **Thompson Starrett Co. Inc.**, 444 Madison Ave., New York, N. Y., LB. $2,874,810, sewage treatment plant ARLINGTON, VA. Arlington Co., Court House, Arlington, VA. Bids July 24. CD 6/21.

City, Wilso, N. C. rejected bids July 12, water mains, LB $88,338, WILSON, N. C. CD 7/23. under LB.

MIDDLE WEST

HEAVY CONSTRUCTION

SOON LETS CONTRACT

▲ **Mich., Flint**—FACTORY—A C Spark Plug Div. General Motors Corp., 7-217 General Motors Bldg., Detroit, Soon Lets Contract, 1 story, masonry 590,000 sq. ft. factory, $6,000,000, Argonaut Realty Div. General Motors Corp., General Motors Bldg., Detroit, archt. CD 7/23.

LOW BIDS AND CONTRACTS

Kenny Constr. Co., 111 W. Washington St., Chicago 2, Ill. CA $830,000. substructure, concrete caisson low lift plant, DETROIT, MICH. City, Water Comrs., Detroit, Mich. Awarded July 5. CD 4/5.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **S. M. Wilson & Co.**, 1616 Cleveland Ave., Granite City, Ill., LB, $1,212,165, Proj. 15-6, consisting of 22 bldgs. incl. 100 units and 1 story management and maintenance bldg., COLLINSVILLE, ILL. Madison County Housing Auth., D. F. Braner, secy. dir., 3 and Heller Sts., East Alton, Ill. Bids July 17. CD 6/15.

S. N. Nielson Co., 3059 Augusta Blvd., Chicago 12, Ill., CA, $750,000, auto body mfg. PLANT ADDN., GARY, IND. E. G. Budd Co., Inc., Gary, Ind. Awarded July 6.

▲ **West End Apartments Inc.**, 2136 Rhode Island Ave., Gary, Ind. Owner Builds. $1,500,000. 200-unit row HOUSING, GARY, IND. Paul I. Cripe, Lemcke Bldg., Indianapolis, Ind., archt. Awarded July 19.

▲ **Campbell-Lowrie-Lautermilch Co.**, 400 W. Madison St., Chicago 6, Ill., CA $2,000,000, 3 bldgs. for production railroad car equipment, HAMMOND, IND. Standard Railway Equipment Co., 4527 Columbia Ave., Hammond, Ind. Lester B. Knight, 600 W. Jackson St., Chicago 6, Ill., archt. Awarded July 17.

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York, N. Y. CA Approx. $1,500,000, FACTORY, MADISON, IND. Westinghouse Electric Corp., 306 Forth Ave., Pittsburgh 30, Pa. CD 7/17.

Barton-Marlow Co., 2631 Woodward St., Detroit, Mich. CA $750,000. 2 story, brick, steel HOSPITAL, GROSSE POINT, (Br. Detroit) MICH. Cottage Hospital, 159 Kercheval St., Grosse Point, Mich. Bids May 29. CD 6/1.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Ark., Mena—TRANSMISSION LINE, etc.—B.A. 8/7—City. Mena, constr. gas transmission line and distr. system. Ralp Delaney, Ada, Okla., engr. CD 4/18.

Minn., Willmar—B.A. 8/8—Kandiyohi Co., J. W. Haines, aud., grav. surf. 85,338 sq. yd. grav. material, 85,338 cu. yd. crush, screen and load or screen and load 585,464 cu. yd. $60,000, E. S. Ward, co. hy. engr.

South Dakota—RURAL DISTRIBUTION LINES—B.A. 8/9—West Central Electric Co-operative, Murdo, 39.1 mi. rural distr. lines, Haakon and Jackson Counties. $100,000. Ulteig Eng. Corp. 1114½ Front St., Fargo, N. D., engrs. CD 6/19.

† **N. M., Los Alamos**—B.A. 8/9—U. S. Atomic Energy Comn., Los Alamos, acid sewer, Inv. No. 291-52-8. $100,000-$150,000. Plans deposit $50. CD 7/19. under LB.

† **N. M., Sacramento Peak**—TRANSMISSION LINE—B.A. About 8/14—U. S. Eng., P.O. Box 1538, Albuquerque, power transmission line (AS1-1A). Serial No. Eng 29-005-52-3. Plans deposit $75.

† **Tex.**, Lackland Air Base (Br. San Antonio)—WATER-WELL, etc. B.A. About 8/15—U. S. Eng., 606 Santa Fe Bldg., Galveston, water well, Inv. No. Eng 41-243-52-14; elevated water storage tank, Inv. No. Eng 41-243-52-15; water distr. sys. imprvs. Inv. No. Eng 41-243-52-16. CD 7/13.

Tex., New Braunfels—B.A. 8/15—City, sewage disposal plant. $60,000. Plans deposit $25. Capt. Alfred Schlafi, Box 68, engr.

Tex., Brownsville—DOCK—B.A. 8/16—Bd. Comrs Brownsville Navigation Dist., Brownsville, repairing strengthening Banana Dock and allied structures $90,000. CD 5/19/50

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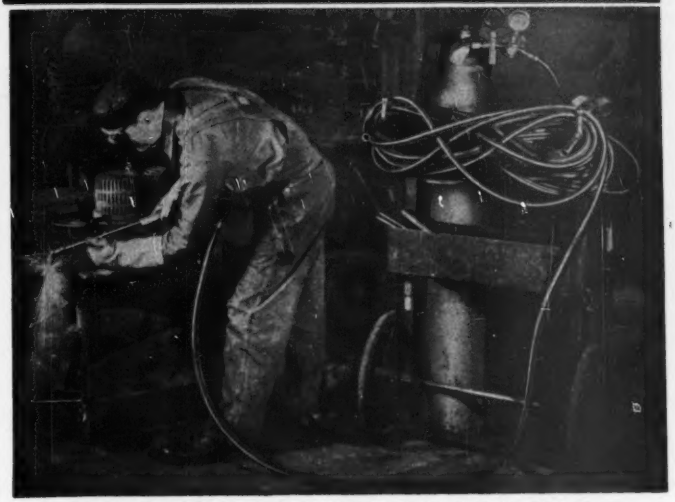

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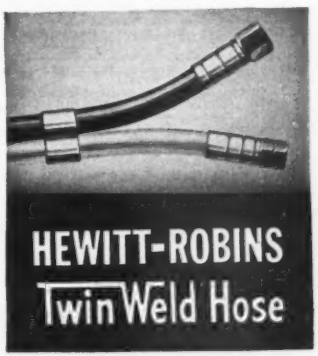

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TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS

BIDS ASKED—BUILDINGS

Tex., Coleman—COURT HOUSE—B.A. 8/13—City, remodel court house. $300,000. Plans deposit $25. Wyatt C. Hedrick, 1005 First Natl. Bank Bldg., Fort Worth, archt. CD 7/6.

Tex., Crystal City—B.A. 8/13—City, 1 story clay tile operations bldg. $60,000. H. R. Walther, 610 Alamo Natl. Bldg., San Antonio, archt., W. E. Haggard, 610 Alamo Natl. Bld San Antonio, engr.

Mo., Milan—HOSPITAL—B.A. 8/15—Sullivan Co., hospital, $500,000, Hewitt & Royer, 1203 Locust St., Kansas City, Mo., archts. CD 11/22.

▲ Kan., Hutchinson—HOTEL—B.A. 8/16—Hutchinson Metropolitan Hotel Co., Wiley Bldg., hotel, $1,000,000, Sharp & Simon, 1221 Baltimore St., Kansas City, Mo., assoc. archts., McCrackin & Hiett, Hutchinson, archts. CD 5/9/50.

Mo., Florissant—SCHOOL—B.A. 8/16—Sacred Heart Catholic Parish, Rev. Wilfred L. Charleville, S.J., pastor, 751 Jefferson Ave., 2 story, 55x187 ft., brick, rein.-con., limestone school, Henry P. Hess, 4005 W. Florissant Ave., St. Louis 7, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † Peter Kiewit Sons' Co., Omaha National Bank Bldg., Omaha, Neb. LB. $2,062,233. flight hangar apron; LB $67,073. parking lot, WICHITA, KAN. Boeing Airplane Co., Wichita, Kan. Bids July 13. CD 7/6.

G. L. Tarlton Contg. Co., 5505 Dale Ave., St. Louis 10, Mo. CA $180,000. 1 story, 71x223 ft., brick, steel, concrete MFG. BLDG., 1 story, 20x247 ft., PLANT addn., to connect two bldgs. to mfg. hospital and clinic equip., 1900 S. Jefferson Ave., ST. LOUIS, MO. Shampaine Co., 1920 S. Jefferson Ave., St. Louis 4, Mo. CD 5/7.

Western Electric Co., 4250 Duncan Ave., St. Louis 10, Mo. Owner Builds. 1 story, 102x203 ft., steel cable STORAGE BLDG., 4240 Duncan Ave., ST. LOUIS, MO.

† D. L. Varney, Inc., 503 Redick Tower Bldg., Omaha, Neb., LB. $470,901, est. $446,945, construct Huron, Mount Vernon, Sioux Falls and Watertown SUB STATIONS, Transmission Div., Missouri River Basin Proj. Spec. No. DC-3454. SOUTH DAKOTA. Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Bids June 25. CD 6/7.

Peterson Const. Co., 2263 Y St., Lincoln, Neb., CA. $90,000. HATCHERY, LINCOLN, NEB. Hill Hatchery, Roscoe Hill, pres., 910 R St., Lincoln, Neb., Bids June 12. CD 6/13.

Peter Kiewit Sons Co., Omaha Natl. Bank Bldg., Omaha, Neb., CA. $96,000. terminal WAREHOUSE, OMAHA, NEB. Independent Truckers, Inc., 115 N. 12 St., Omaha, Neb. Bids July 10. CD 7/9.

▲ † Trotti & Thomson, 390 S. 4 St., Beaumont, Tex., LB. $2,870,000. est. $2,500,000. 5.151 lin. ft. steel, concrete seawall extens., Inv. No. CIVENG 41-243-51-91, TEXAS. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids July 20. CD 6/25.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Peterson Constr. Co., 616 National Bldg., Minneapolis, Minn. CA $1,000,000. 1 story, 312x705 ft. repair parts DEPOT, HOPKINS, MINN. Minneapolis-Moline Co., Hopkins, Minn. CD 9/15/50.

▲ Brown & Root, Inc., Box 74, Houston, Tex., CA. $2,250,000. chain mfg. PLANT; $775,000. WAREHOUSING and storage, LONGVIEW, TEX. Whitney Chain Co., 237 Hamilton St., Hartford, Conn. Awarded July 23. CD 7/24.

N. H. Hansen, Cedar Falls, Ia., CA. $420,964, general contract, COUNTY HOME, WATERLOO, IA. Black Hawk Co., Waterloo, Ia. Bids July 12. CD 6/11.

Garbi & Joseph Inc., 123 E. 9 St., North Little Rock, Ark., CA, Approx. $250,000, mfg. PLANT, LITTLE ROCK, ARK. Harkins Container Co., c/o contractor. CD 7/9.

Blaser Constr. Co., Topeka, Kan. LB. $348,222. LABORATORY SCHOOL, Kansas State Teachers College, EMPORIA, KAN. State Bd. Regents, Topeka, Kan. Bids July 10. CD 7/3.

Carver Estates, Inc., 2301 Calumet St., Houston, Tex. Own Forces. $315,000. 33 DWELLINGS, HOUSTON, TEX. CD 11/20.

Ralph A. Smith, 6409 Baine St., Houston, Tex., Own forces. Approx. $375,000. 35 DWELLINGS, HOUSTON, TEX. CD 7/23.

FAR WEST

BIDS ASKED—HEAVY CONTRUCTION

Calif., Palo Alto—B.A. 8/10—City, city clk, City Hall, street imprvs. on Amarillo Avenue.

Calif., Hillsborough—B.A. 8/13—City clk., City Hall, new outfall sewer lines.

† Oregon—B.A. 8/14—U. S. Eng., 628 Pittock Block, Portland, Zone 5, construct bank protection works along the left bank of the McKenzie River at the Thurston Location, approx. 8 mi. east of Springfield, Serial No. CIVENG 35-026-52-29.

Oregon—B.A. 8/15—U. S. Eng., Pittock Block, Portland, bank protection, channel imprvs., left bank Clackamas River, Dixon Farm location, Clackamas Co.

† Oregon—B.A. 8/20—U. S. Eng., Pittock Block, Portland, bank protection, right bank, South Saniam River, Pape location, Civeng. 35-026-51-28, Linn Co.

BIDS ASKED—BUILDINGS

† Wash., Oak Harbor—SCHOOL—B.A. 8/14—Community Facilities Serv. Housing and Home Finance Agency, New World Life Bldg., Seattle, 4, Wash., 1 story, masonry elementary school Ault Field, U. S. Naval Air Station, Whidbey Island. $500,000. Plans deposit $25. Rueger & Rueger 15 N. Broadway, Tacoma, Wash., archts. CD 6/28.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Lembke, Clough & King, 1927 Fremont St., Las Vegas, Nev., CA. $1,746,400. sewage disposal unit and misc. bldgs., Location B Inv. No. 291-51-139. LAS VEGAS, NEV. U. S. Atomic Energy Comm., Las Vegas, Nev.

▲ † U. S. Eng., Pittock Block, Portland, Ore., rejected bids. construct Big Cliff Dam, complete Detroit Dam, North Santiam River, CIVENG 35-026-51-300, Marion Co. L.B. $7,397,547., est. $5,822,197. OREGON. CD 7/23, under LB.

† Roy L. Blair & Co., 1220 Ide St., Spokane, Wash., CA $819,660. bridge over Mores Creek on Lucky Peak Dam Proj., IDAHO U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash. Bids June 21. CD 6/26, under LB.

† M. McCullough, 503 13 Ave., Salt Lake, City, Utah, LB. $296,900. modification of Bldg. 10, Hill Air Force Base, HILL FIELD, UTAH, U. S. Army, c/o Air Force Contracting Office, Hill Air Force Base, Hill Field, Utah.

ARIZONA—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix, Ariz.

H. L. Royden, 2211 W. Jackson St., Phoenix, Ariz., CA. $60,811 wid'n. existing rein.-con. bridge U.S. 60 at Show Low Creek, Navajo Co. Awarded July 21.

City, County—City, Seattle, Wash., rejected bids Diagonal Ave. sewage pumping plant, L.B. $204,521 SEATTLE, WASH. CD 7/18, under LB.

Argentieri & Colarossi, 1815 Jackson St., Seattle, Wash., LB, $112,876, 43,200 ft. water distribution mains, SEATTLE, WASH. Water Dist. No. 79 c/o Parker, Hill and Ingman, 221 Smith Tower, Seattle, Wash., engrs. Bids July 20. CD 7/12.

Consolidated Western Steel Corp., 5700 S. Eastern Ave., Los Angeles, Calif., CA, $517,000, fixed roller type drop gate, 8 stop log sections, 6 head gate sections, Moore Dry Dock Co., foot of Adeline St., Oakland, Calif., CA, $114,430, 92 crest gate latch assemblies and 30 latch-supporting steel frames for Rock Island Dam WENATCHEE, WASH. Chelan Co. Public Utility Dist., c/o Stone & Webster Eng. Corp., engrs., 49 Federal St., Boston, Mass. Bids June 11. CD 5/21.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento, Calif.

Griffith Co., 1060 S. Broadway, Los Angeles, Calif., LB $366,833, railroad underpass 1.2 mi. highway on Airport Ave. between State Rt. 4 and Norris Rd., Kern Co. Bids July 18. CD 7/2.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento, Calif.

E. C. Young & Co., 608 Knott St., Bakersfield, Calif., LB. $73,295, grading, surf. 4.9 mi. hy. north of Randsburg Junction, Kern Co. Bids July 18. CD 7/2.

Paris Bros., 2415 Oregon St., Berkeley, Calif., LB, $300,-944, sanitary and storm sewers to connect Alameda's sewer system East Bay Municipality Interceptor, ALAMEDA, Calif., City, City Hall, Alameda, Calif. Bids July 17. CD 7/12.

Cox Bros. Constr. Co., P. O. Box 36, Stanton, Calif., LB. $104,005, imprv. Montezuma Rd. between 63 and El Cajon Blvd., SAN DIEGO, CALIF. City, City Hall, San Diego, Calif. CD 12/6/44.

Volpa Bros., 233 Nielsen St., Fresno, Calif., CA, $65,-893, grading roadway, installing drainage on Paso Robles-Creston Road near Paso Robles, SAN LUIS OBISPO, CALIF. San Luis Opisco Co., Court House, San Luis Obispo, Calif. Bids July 16, awarded July 18. CD 7/6.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ John E. Branagh & Son, 105 Sheridan Ave., Piedmont, Calif., CA, $2,564,370, 3 story 1,600,000 sq. ft., McClymonds HIGH SCHOOL, 2607 Myrtle St., OAKLAND, CALIF. Bd. Educ., 1025 2 Ave., Oakland, Calif. Bids July 10, awarded July 19. CD 7/17, under LB.

▲ Buttress & McClellan Inc., 1900 Beverly Blvd., Los Angeles, 4, Calif., CA, Approx. $24,000,000. 1,200,-000 sq. ft. guided missiles PLANT, POMONA, CALIF. Consolidated Vultee Aircraft Co., 3302 Pacific Hy., San Diego, Calif.

R. Pederson & Sons, 446 Clark St., Fresno, Calif., LB. $574,766, South Primary SCHOOL ADDN., Oregon Ave., CORCORAN, CALIF. Corcoran Union Elementary School Dist. 1300 Letts Ave., Corcoran, Calif. Bids July 17. CD 7/9.

E. J. Wasielewski, 24 E. Glendale Ave., Phoenix, Ariz., CA, $435,466. two 1 story, 42,000 sq. ft., masonry, concrete SCHOOLS, PHOENIX, ARIZ. Maricopa County First Ave. and Washington St., Phoenix, Ariz. Awarded July 23.

J. V. McNeil Estate Co., 714 W. Olympic St., Los Angeles, Calif., Owner Builds, $140,000, concrete WAREHOUSE and manufacturing bldg., LOS ANGELES, CALIF. W. M. Taggart, 1439 W. 3 St., Los Angeles, Calif., engr.

McDaniel Constr. Co., P.O. Box 1087, Marysville, Calif., LB, $320,000, 21,000 sq. ft., HY. BLDG., MARYSVILLE, CALIF. State Div. Architecture, P. Wks., Bldg., Sacramento, Calif. Bids June 12. CD 5/25.

Nevada Bldg. and Development Co., Las Vegas, Nev., LB, $478,000. Construct, manage and finance 72 family HOUSING UNITS, near here, MOFFETT FIELD, CALIF. P. Wks. Officer, Twelfth Naval Dist., Federal Office Bldg., Civic Center, San Francisco, Calif. Bids July 18. CD 6/29.

Jacks & Irvine, 620 Market St., San Francisco, Calif., CA, $436,128, CHURCH and convent, Corpus Christi Parish Alemany Blvd. and Santa Rosa Ave., SAN FRANCISCO, CALIF. Roman Catholic Archbishop, San Francisco Diocese, 1100 Franklin St., San Francisco, Calif. Awarded July 18. CD 4/4.

Torrance Unified School Dist., 2335 Plaza Del Amo., Torance, Calif., rejected bids July 17, Madrona and Rivera School TORRANCE, CALIF. CD 7/23, under LB.

U. S. POSSESSIONS

BIDS ASKED—HEAVY CONSTRUCTION

† Puerto Rico Aguadilla—AIRPORT—B.A. About 8/31—U. S. Eng., P.O. Box 4970, Jacksonville, Fla., compass swinging base, hardstands and taxiway lighting, Ramey Air Force Base, Serial No. Eng. 08-123-52-23.

AMERICANS ABROAD

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Merritt-Chapman & Scott Overseas, Inc., 17 Battery Pl., New York, N. Y., design and construct. Approx. $3,500,000. PAPER MILL, HADERA, ISRAEL. American Israeli Paper Mills, Ltd., Tel Aviv.

LATIN AMERICA

BUILDINGS

LOW BIDS AND CONTRACTS

Koppers Co. Inc., Koppers Bldg., Pittsburgh, Pa., design and construct, battery of 13 chemical-recovery coke ovens at PLANT near HUACHIPATO, CHILE, Pacific Steel Co., Huachipato, Chile.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Bennett & White of Edmonton, Ltd., 11239 83 St., Edmonton, Alta. CA, $1,250,000, rein.-con. provincial government telephone COMMUNICATION CENTRE, EDMONTON, ALTA. Province of Alberta, Parliament Bldgs., Edmonton, Alta. Bids July 14, awarded July 20. CD 6/22.

▲ Winnipeg Supply & Fuel Co., Ltd., 812 Boyd Bldg., Winnipeg, Man., CA, $2,543,000, 9 Canadian ARMS BLDGS. near here, WINNIPEG, MAN. Defence Constr. Ltd., Kensington Bldg., Winnipeg, Man. Awarded in June.

Louis Fecteau, 104 St. Jean St., Quebec City, Que., CA, Approx. $500,000 68x197 ft., CHURCH, EDMUNDSTON, NB. Parish of Our Lady of the Seven Sorrows, Victoria St. and 37 Ave., Edmundston, N.B. E. Courchesne, 4739 Coalbrook Ave. N., D.G., Montreal, Que., archts.

▲ A. W. Robertson Ltd., 57 Bloor St. W., Toronto, Ont., CA, $2,953,500, Canadian Army BARRACKS, CAMP BORDEN, ONT Defence Constr. Ltd., 441 Queen's Quay W., Toronto, Ont. Bids July 4. CD 6/25.

John Hayman & Sons, 423 Wellington St., London, Ont., CA, $750,000, 3 story, basmt., 200x225 brick, concrete BOTTLING PLANT, LONDON, ONT. John Labett Ltd., Simcoe St., London, Ont. Awarded July 21. J. M. Waat, 349 Richmond St., London, Ont., archt. CD 5/17/46.

▲ Pigott Constr. Co. Ltd., 1250 Bay St., Toronto, Ont., CA $1,615,000, central HEATING PLANT and warehouses, LONG BRANCH, ONT. Defence Constr. Ltd., 441 Queen's Quay W., Toronto, Ont.

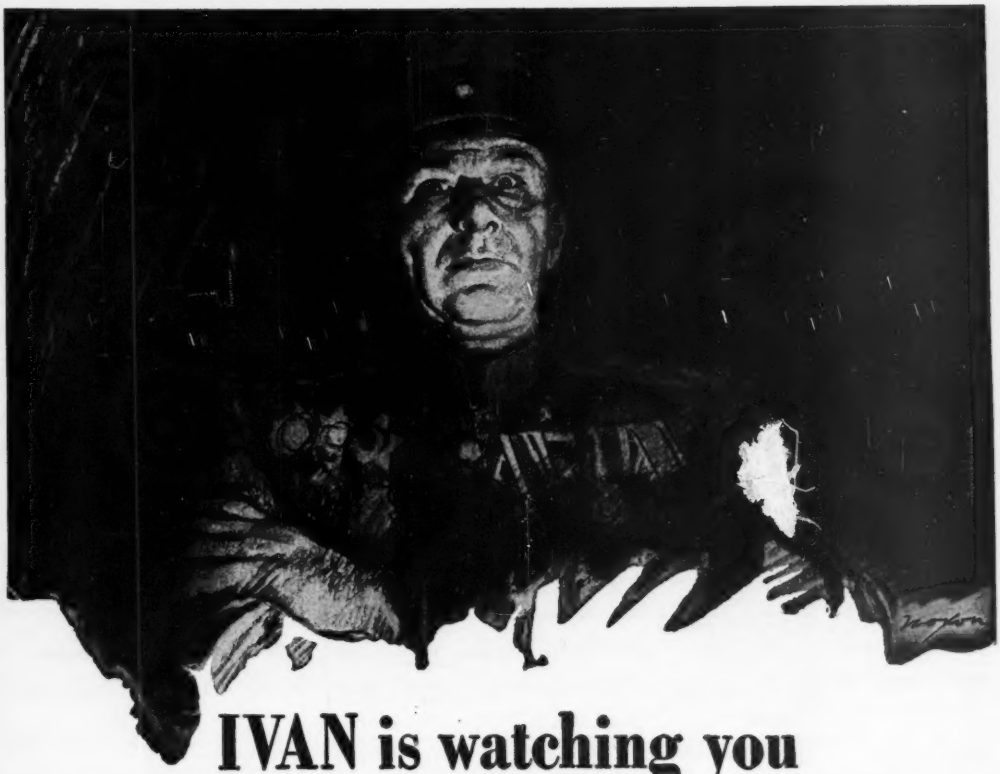
▲ B. C. Contractors, 207 W. Hastings St., Vancouver, B. C. CA, $2,000,000, PLYWOOD PLANT, VICTORIA, B. C. B. C. Forest Products Ltd., 995 W. 6 Ave., Vancouver, B. C., D. A. Saunders, 995 W. 6 Ave., Vancouver, B. C., engr. Awarded July 15. CD 6/27.

▲ Bersh-Tarnow Constr. Co., 128 Queen St., Chatham, Ont. Own Forces, Approx. $2,400,000, 200 brick, veneer DWELLINGS, CHATHAM ONT.

▲ Catalytic Constr. Co., 1528 Walnut St., Phila., Pa., U. S. A. CA Approx. $10,000,000 REFINERY UNIT SARNIA, ONT. Sun Oil Co., Ltd., 29 Basin St., Sarnia, Ont. CD 11/17/50.

▲ Dickie Constr. Co., Ltd., 17 Yorkville Ave. Toronto, Ont. CA, Approx. $1,500,000. 396x407 ft., bread and cake BAKERY and head office and 100x100 ft., cafeteria all rein.-con., brick, TORONTO, ONT. Chr stie Brown & Co. Ltd., 207 King St. E., Toronto, Ont. Mathers & Haldenby, 15 St. Mary St., Toronto, Ont., archts.

▲ Pigott Constr Co. Ltd., 1250 Bay St., Toronto, Ont., CA, Approx. $2,000,000, 1 story 104 000 sq. ft., steel frame, brick aircraft parts FACTORY, TORONTO, ONT. Rotax Canada Ltd., Montreal Airport, Dorval, Que. H. A. Chapman & R. G. Meschino, 2589 Eglinton Ave. W., Toronto, Ont., archts. Awarded July 19. CD 7/19.



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THE BETTER WE PRODUCE
THE STRONGER WE GROW

OFFICIAL PROPOSALS

RATE: THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS $1.25 PER LINE (OR FRACTION) PER INSERTION.
COPY RECEIVED UP TO 3:00 P. M. THURSDAY FOR ISSUE OUT FOLLOWING THURSDAY SUBJECT TO SPACE OPEN FOR LAST MINUTE ADS
SEND COPY TO OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 18, N. Y.

Bids: August 15, 1951

State Highway Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, as amended, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on Wednesday, August 15, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, Dist. Engr., 353 Broadway, Albany, N.Y.				
Saratoga	FAS81-18	Middle Grove-Dunhams C.R.21 Proj No. S-356(1)	4.59	Asp. Conc. Ty.1A,Opt.	$14,000 Plans $15	$260,000
Saratoga	FARC51-87	Stillwater-Schuylerville, Pt. 1, SH5205 Proj. No. F-391(8)	5.34	Asp. Conc. Ty.1A., Opt.	$7,500 Plans $10	$126,000
Warren & Saratoga	FAS851-19	Corinth Bridge & Approaches Co. Rd. Proj. No. S-327(1)	0.34	Bit. Mac. Pen. Method, Ty.1 5 Span Alpha Deck Girder 630' Total Alpha Royalty = $480.50	$35,000 Plans $15	$610,000
		DISTRICT No. 2				
		L. Ketchum, Dist. Engr., 109 No. Genesee Street, Utica, N. Y.				
Fulton	FAS851-17	Gloversville-Vail Mills Proj. No. S-352(1)	2.65	Bit. Treated Graded Gravel	$6,000 Plans $10	$108,000
Montgomery	MT51-1	N. Y. State Thruway-Mohawk Sect. Canalized Mohawk River (Yosts-Fort Plain)	3.03	Hydraulic Excava.	$95,000 Plans $10	$1,841,900
Oneida	FARC51-60	State Bridge-Verona Station, S.H.8432 Proj. No. F-618(2)	2.42	Asp. Conc. Ty. 1A, Opt.	$5,000 Plans $10	$94,000
Oneida	FAC51-2	Rome West Artery (West Whitesboro St.-Black River Blvd.) Proj. U-635(3)	0.72	Traffic Control System	$2,200 Plans $10	$40,000
		DISTRICT No. 3				
		Wm. Robinson, Dist. Engr., Weigh Lock Bldg., Syracuse, N. Y.				
Onondaga	MT51-3 ST51-5	N. Y. State Thruway-Mohawk Sect. Town Line Road	0.57	9"Cem. Conc. Pavt., 52'-31'&Var.Wide = 0.28 Mi. Asp. Conc. Ty. 1A, Opt. = 0.10Mi. Misc. Work = 0.19 Mi. Hy.Sep.4SP.Alpha Beam, 207'Total 53.5' Alpha Beam Bridge Alpha Royalty = $367.20	$25,000 Plans $15	$461,000
		DISTRICT No. 8				
		J. S Bixby, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Columbia & Dutchess	TSP51-1 RC51-6	Taconic State Pkwy.Sect.7,Pt.3; 8; 9,Pt.1; 9A,Pt.2; 9B,Pt. 1 (Lake Taghkanic-West Taghkanic, Co. Rd. 12) Rock City-Lafayetteville, SH628 West Taghkanic-Ancram, SH9058	14.70	Grading & Structures = 12.35 Miles Asp.Conc.Ty.1A, Opt. = 1.97 Miles 9"Cem.Conc.Pavt. 48' Var.Wide = 0.38 Mi. Hy.Sep.Conc.Rig.Frame, 80'-7"Sp. Br.2Sp. Alpha I-Beam, 16@82'-10"&2@80'-11" Hy.Sep.2SP.Conc.Rig. Frame, 44'-6"Ea. Hy.Sep.Conc.Rigid Frame 44'-1-1/2"Sp. Hy.Sep.Conc.Rigid Frame = 44 -1-1/2" Sp. Alpha Royalty = $500.	$215,000 Plans $100	$3,986,000
		DISTRICT No. 9				
		F. W. Donovan, Dist. Engr., 71 Frederick St., Binghamton, N. Y.				
Broome	FARC51-62	Windsor-Deposit, SH5338 Proj. No. F-344(18)	3.57	Asp.Conc.Ty.1A,Opt.	$5,000 Plans $10	$98,000
Delaware	FARC51-58	Hancock-East Branch, Pts.1&2, SH5456, 5246 East Branch-Sullivan Co.L., Pts.2&1, SH5340,5383 Proj. No. F-336(15)	10.45	Asp. Conc. Ty.1A,Opt.	$25,000 Plans $10	$419,000
Orange & Sullivan	FARC51-50	Monticello Vill.-Broadway & Jefferson Sts., SH5490 Bloomingburg-Monticello,Pts. 2&1, SH3457, 5457A, 5510, 5510A Middletown-Bloomingburg, SH5210 Proj. No. F-495(5); F-496(6)	16.79	Asp.Conc.Ty.1A, Opt.	$38,000 Plans $10	$688,000
Sullivan	FARC51-63	Liberty-Co. Line, Pt.1,SH5223 Proj. No. F-336(16)	3.33	Asp.Conc.Ty.1A, Opt.	$5,000 Plans $10	$88,000
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Highway at Little E. Neck Road, Babylon, L. I., N. Y.				
Bronx	FAMDE51-2	Maj. Deegan Expy.Cont. #3 Proj. No. U-1062(11)	0.75	Viad. Superstr.	$190,000 Plans $50	$3,775,000
Nassau	PSC8466-14337	Elim. of Grade Crossing of Terrace Place & Central Av., Valley Stream with the Long Island RR	1.43	8"Cem.Conc.Pavt. 44'&Var.Wide = 0.14 Mi. Elev. of LI RR Tracks = 1.34 Mi. RR Sep. 65' Pl. Girder RR Sep. 66'-6 1/2" Pl. Girder	$100,000 Plans $25	$1,750,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY,
SUPT. OF PUBLIC WORKS

Bids: August 14, 1951

Cedar Bridge Construction

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

CEDAR BRIDGE—WHITING ROAD

Construction of Cedar Bridge—Whiting Road, from State Highway Route S-40 to State Highway Route 40 in Union, Lacey and Manchester Townships, Ocean County, Federal Aid Secondary Project No. S-119(6). Length 11.552 miles.

Estimated: 3,000 cu. yds. Road Gravel
205,000 sq. yd. 2" Gravel Bit. Surface
331,880 gals. Bituminous Material
419,700 sq. yds. Sand Cover, Tack & Seal Coats

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, August 14, 1951, at ten o'clock (10:00 A.M.–EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.–DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements, and by Sections 2, 3 and 4, P. L. 521, 78th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 20 Robbins Street, Toms River, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled

(Continued on page 95)

OFFICIAL PROPOSALS
(Continued from page 94)

labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: August 15, 1951

Brandywine River Bridge

Sealed proposals will be received by the State Highway Department at its offices in Dover, Delaware, until 2:00 P. M., E. D. S. T. (1:00 P. M., S. T.) August 15, 1951, at that time and place publicly opened for a contract involving the following approximate quantities:

Contract 1098
Federal Aid Project S-148 (1)
BRANDYWINE RIVER BRIDGE APPROACHES
New Castle County

24'-36'	Hot-Mix Asphalt Pavement 0.925 Miles
3	A. Clearing
1.5	A. Grubbing
30,000	C. Y. Excavation
400	C. Y. Rock Excavation
13,300	C. Y. Borrow
1,000	C. Y. Borrow Pit Stripping
15,300	C. Y. Selected Borrow
8,200	T. Waterbound Macadam
3,550	T. Hot-Mix Asphalt Surface
15	C. Y. Cement Concrete Masonry
700	Lbs. Reinforcing Steel
350	L. F. 12" R. C. Pipe
600	L. F. 15" R. C. Pipe
420	L. F. 18" R. C. Pipe
350	L. F. 24" R. C. Pipe
60	L. F. 48" R. C. Pipe
230	L. F. 8" C. M. Pipe
1,570	S. Y. 4" C. C. Gutter
2,400	L. F. Integral Curb & Gutter
1,100	L. F. Parkway Curb (Type 1)
6,700	S. F. 4" C. C. Sidewalk
550	S. F. 6" C. C. Sidewalk
1,750	L. F. Wood Shoulder Curb
14	Each Catch Basins
3	Each Adjusted Catch Basins
7,000	Lbs. Castings
1,750	L. F. Wire Rope Guard Fence
8	Each End Post Attachments
100	C. Y. Topsoil
4,000	S. Y. Topsoiling
1	A. Seeding
7,800	S. Y. Sodding
5,600	Gal. R. C. 1 Asphalt
5,600	Gal. R. C. 3 Asphalt
225	T. Slag Chips
225	T. Crushed Chips
2,500	T. Quarry Screenings
20	S. Y. Rip-Rap
35	T. Flake Calcium Chloride L. S. Removal of House (Sta. --)
	L. S. Electrical Lighting System

The provisions of the Federal Aid Highway Act, as amended, are applicable to this project.

The Employment Agency for this Contract shall be the Delaware State Employment Service, 601 Shipley Street, Wilmington, Delaware.

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contract shall commence within ten (10) days after execution of the contract and be completed as specified.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money order to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No. 1098."

The contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained upon receipt of five dollars ($5.00) for each set, which amount will not be refunded.

Make checks payable to the State Highway Department.

STATE HIGHWAY DEPARTMENT
BY: J. Gordon Smith,
Chairman

Richard A. Haber, Chief Engineer
July 18, 1951

Bids: August 21, 1951

Suburban Development

Sealed proposals will be received by the President of the Levy Court of New Castle County, Room 133, Public Building, Wilmington, Delaware, until 11:00 A.M. Daylight Saving Time, on August 21, 1951 and at that time and place publicly opened for a contract involving the following approximate quantities:

Contract SD-38
Old Deerhurst
New Castle County

930	Cubic Yards Excavation
1,200	Tons Waterbound Macadam
250	Tons Hot-Mix Asphalt
70	Linear Feet 4" Vit. Clay Pipe
150	Square Yards C.C. Gutter
2,920	Linear Feet Integral Curb & Gutter
5	Each Adjusted Manholes
2,500	Square Yards Topsoil
0.6	Acre Seeding
80	Square Feet Resetting Flagstone Walk

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contract shall commence within ten (10) days after execution of the contract.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the County Engineer.

Each proposal must be accompanied by a surety bond, certified check, or money order to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Suburban Development Contract No. SD-38."

The contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained on and after July 31, 1951 upon receipt of two dollars ($2.00), which amount will not be refunded.

Make checks payable to the Levy Court of New Castle County.

LEVY COURT OF NEW CASTLE COUNTY
By: John Taylor, County Engineer

Bids: August 14, 1951

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:
Contract No. 76

The work to be performed under this Contract involves the furnishing and installation of side-of-road delineators, all in connection with the construction of the New Jersey Turnpike. This work extends from the southern terminus of the Turnpike at Deepwater in Salem County to the northern Terminus at Route 6 in Bergen County.

Principal items of work include:

Delineators on Roadway Shoulders, (including steel supporting posts) 8,000 units

Delineators on Bridge Structures, (including steel mounting brackets on steel and concrete parapets and guard rail posts) 330 units

Proposals will be received at the office of the New Jersey Turnpike Authority, 66 Prospect Street, Trenton 8, New Jersey until 10:30 o'clock Eastern Daylight Saving Time on the morning of August 14, 1951, and thereafter in the Veteran's Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 Eastern Daylight Savings Time, on the same date, at which latter time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their Proposal a revised financial statement and a statement of plant and equipment.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, on and after July 23, 1951, at the office of the New Jersey Turnpike Authority, 66 Prospect Street, Trenton 8, New Jersey and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications, for Construction of the New Jersey Turnpike, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5) per cent of the amount of the proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for the proposal bond, of the form to be used for the financial statement and for the plan and equipment statement to be submitted with the proposal and of the special addressed envelope are furnished in detached form with the contract documents.

The Contract will be awarded or the proposal rejected within fifteen (15) days from the date of opening proposals. The right is reserved to reject any or all proposals.

THE NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

July 18, 1951.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3499) will be received by Bureau of Reclamation, Sacramento, California, until August 28, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of a warehouse for Folsom Power Plant, Folsom Unit, American River Division, Central Valley Project, California. The work is situated approximately 2 miles northeast of Folsom, California. Principal items are approximately: excavation 1,100 cu. yds.; concrete, 1,100 cu. yds.; furnishing and placing reinforcement, 62,000 lbs.; furnishing and laying cast-iron water pipe, 24,000 lbs.; furnishing and constructing warehouse, lump sum; and other work. Time allowed for completion will be 240 days. For particulars, address Bureau of Reclamation, 2430 J Street, Sacramento, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

United States Department of the Interior Bureau of Reclamation

NOTICE IS HEREBY GIVEN that sealed bids on Invitation No. 7038-205, for furnishing prefabricated building for warehouse at Alcova Power Plant, Kendrick Project, Wyoming, will be mailed to P. O. Box 280, Casper, Wyoming, or delivered to the office of the Bureau of Reclamation in time for the public opening at 10 a.m., Mountain Standard Time, August 9, 1951, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming.

Copies of the standard forms and of the invitation may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the invitation and drawings furnished for bidding purposes; for all other $0.25 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

OFFICIAL PROPOSALS

Bids: August 16, 1951

Constructing Masonry Filters and Regulator House

CONTRACT 209A

SEALED PROPOSALS addressed to the Board of Contract and Supply of The Metropolitan District and endorsed "CONRACT 209A—PROPOSAL FOR THE CONSTRUCTION OF MASONRY FILTERS AND REGULATOR HOUSE AT THE FILTRATION PLANT IN THE TOWN OF WEST HARTFORD, CONNECTICUT," will be received at the Executive Offices of The Metropolitan District, 115 Broad Street, Hartford, Connecticut, until 2:15 P.M., Eastern Daylight Saving Time, Thursday, August 16, 1951, at which time and place they will be publicly opened and read.

The work to be done consists of the construction of four ½-acre, earth covered masonry Filter Beds, of so-called groined arch type of construction, Regulator House and appurtenant structures at the Filtration Plant in West Hartford; the principal materials, except concrete and Regulator House superstructure materials, furnished by the District.

Approximate quantities for the principal items:

Earth refill and embankment	30,000 cubic yards
Filter gravel and sand	11,400 cubic yards
Concrete masonry	8,400 cubic yards
Placing reinforcing steel	110 tons

Drawings and Specifications may be obtained on and after July 19, 1951, at the Office of the Deputy Manager and Chief Engineer of The Water Bureau of The Metropolitan District, 115 Broad Street, Hartford, Connecticut, on deposit of twenty dollars ($20), in cash or certified or cashier's check, made payable to The Water Bureau of The Metropolitan District, which amount will be refunded if both are returned in good order within one month of date of opening of bids. No deposits will be refunded after that time. Specifications used in making a bid will be considered as returned.

Each proposal must be accompanied by a certified check for an amount covering not less than ten per cent. (10%) of the total amount bid, made payable to The Metropolitan District, or a bid bond in like amount, and a satisfactory surety bond, as stated in the Information for Bidders, for the total amount bid will be required of the successful bidder for the faithful performance of the contract.

BOARD OF CONTRACT AND SUPPLY,
By: Richard Dillon, Clerk.
Hartford, Connecticut,
July 13, 1951.

Bids: August 16, 1951

Route Construction

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 28, SECTION 29

Repaving of Route 28, Section 29, from Route 27 to South Broad Street, in the City of Elizabeth, Union County. Length 0.822 miles.

Estimated:	
9,000	cu yds. Roadway Excavation Earth
20,050	sq. yds. Pavement Excavation
6,880	cu. yds. Subbase
1,020	sq. yds. 6" Concrete Base Course
313	tons Bituminous Concrete Pavement
19,050	sq. yds. 10" R. C. Pavement Surface
570	lin. ft. 12" R. C. & C-I Culvert Pipe
30	units Manholes, Inlets & Catch Basins
8,150	lin. ft. 9" x 20" White Concrete Vertical Curb

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Thursday, August 16, 1951, at ten o'clock (10:00 A.M.-EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.-DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

OFFICIAL PROPOSALS

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: August 21, 1951

State Hospital Work

Notice is hereby given that sealed proposals will be received in the office of the Director, Division of Purchase and Property, Room 318, State House, Trenton 7, New Jersey, for the following:

General work, structural and miscellaneous iron work, plumbing, heating and ventilation, electrical work and elevator for Senile Building at the New Jersey State Hospital at Marlboro, New Jersey.

Bids for the above will be received at the office of the Director, Division of Purchase and Property, State House, W. State St., Trenton 7, New Jersey on Tuesday, August 21, 1951 at one (1:00 o'clock, eastern standard time and will be opened and read immediately thereafter. Bids must be made on the standard proposal form, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than 5% of the amount of the bid, cash, in the amount of 5% of the bid or a bid bond in the amount of 5% of the bid, and must be delivered at the above place on or before the hour named, as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than special addressed envelopes will be considered informal and will be rejected. The Director reserves the right to reject any and all bids and to award contract in part or whole if deemed to the best interests of the State to do so. The successful bidder will be required to qualify for surety bond in the full amount of the contract, of a company authorized to do business in the State of New Jersey.

Plans and specifications, form of bid, contract and bond for the proposed work are on file and may be obtained upon application to the Director, Division of Purchase and Property, State House, Trenton, New Jersey on deposit of twenty-five dollars ($25.00) for each set; this amount to be refunded to the bidder upon receipt of same in good condition within 30 days after the award of the contract.

DEPARTMENT OF THE TREASURY
Division of Purchase and Property
Fred V. Ferber, Director

Bids: August 21, 1951

Conical Plug Valves, Etc. Contract 412

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, August 21, 1951, for Contract 412, for furnishing, testing and delivering eight 48-inch and two 36-inch cast steel motor-operated conical plug valves, two 42-inch, two 24-inch and one 12-inch cast iron motor-operated conical plug valves, one 14-inch cast iron manually-operated conical plug valve, one 20-inch cast iron motor-operated gate valve, pipe couplings and miscellaneous valves for installation in the intake and outlet chambers of the Neversink tunnel, the Downsville release water chamber and the outlet chamber of the East Delaware tunnel of the Delaware aqueduct, all as set forth in the specifications.

No bid will be received and deposited unless accompanied bya certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of thirty-five thousand dollars ($35,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety, etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS B. McGAHEN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

The CONTRACTOR—

like a GENERAL

Prepares for Victory

BEFORE he goes into battle on a new job he sees that his army of construction workers is *equipped*.

Looking over ENGINEERING NEWS-RECORD he sees, let us say, a new type of rubber-tired wheelbarrow. Looks into their success on other jobs—and orders them. He sees a crawler crane, which is particularly capable of setting steel—some of the big steel erectors are using many of them. He contracts for one to be delivered to the new job. New developments in wire rope—successful use of special cements—roofing plank or composition siding of light weight, speedily placed at low cost—and other elements that save him time and mony—are shown in picture and text.

Alert Contractors, who not only read the proposals for new jobs, but who follow the *news of the manufacturers* in the display advertising pages—get the most out of their ENGINEERING NEWS-RECORD. They are the men who are able to estimate a job close enough to "land it"—and who make money on the contract.

SANITARY ENGINEER

Manufacturer of Sewage and Water Treatment Equipment requires the services of an experienced engineer with practical and educational background. Mid-western location. Please submit full particulars in reply which will be held in confidence.

P-1440, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

SEARCHLIGHT SECTION

Classified Advertising

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** :EQUIPMENT :USED OR RESALE

UNDISPLAYED RATE

$1.50 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.
EMPLOYMENT WANTED and Individual Selling Opportunity undisplayed rate is one-half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
Replies are forwarded each day as received at each of the offices mentioned without additional charge.

Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED RATE

The advertising rate $14.25 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured ⅞ inch vertically on one col. - 3 col.—30 inches to a page. E.N.R.

New advertisements received by August 6th will appear in the August 16th issue.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

STATE EXAMINATIONS

THE IOWA STATE Board of Engineering Examiners will hold its next examinations in professional engineering on September 18 and 19 and in land surveying on September 20 beginning at 9 A.M., in the Senate Chamber, State House, Des Moines, Iowa.

POSITIONS VACANT

BUILDING INSPECTOR—The County of Fairfax Virginia, is accepting applications for the position of Building Inspector. Duties of this position as head of the Building Inspection Department are to carry out the enforcement of a recently adopted building code and to conduct the various administrative duties required of this office. Applicants having the following qualifications will be duly considered: Registered architect or professional structural or civil engineer having at least three years' experience as a construction executive in residential, light and heavy industrial construction. He shall have a thorough knowledge of standard materials and methods used in structural engineering and building construction. All applicants for this position should address all correspondence to Mr. R. M. Loughborough, Executive Secretary, Fairfax County, Fairfax, Virginia. Give full particulars as to education, experience, age, at least three references and should state the salary desired.

WANTED—GRADUATED civil or structural engineer as field representative, Ohio, by long established engineering, promotional and educational organization. Give resume of education, engineering experience and salary requirements. Prefer age 25-45. P-1418, Engineering News-Record.

FIELD ENGINEER—for progressive steel fabricator and erector in eastern U. S. Prefer young, single man, minimum of three years' building surveying experience, with car and willing to travel. Job involves checking foundations prior to erection of steel. Plenty of work, headaches, responsibility, and opportunity. P-1415, Engineering News-Record.

EXPERIENCED AND qualified estimator for general building construction. Must be thoroughly familiar with building plans and experienced in pricing and purchasing for building construction. Applicant should submit a proven experience record. A very attractive proposition can be offered to a qualified man preferably under 40. Location in Southwest. P-1287, Engineering News-Record.

STRUCTURAL STEEL Detail Draftsmen and Checkers. All types of Structures. Vacation, group insurance, good working conditions. Only top quality men. Send complete written information. Bristol Steel & Iron Works, Inc., Bristol, Virginia-Tennessee.

PROFESSOR OF MECHANICAL Engineering wanted. M.E. with Master's degree plus power plant experience to be head of Mechanical Engineering Department. Salary $5700 on 9 months' basis. Send applications to Professor E. L. Lium, University of North Dakota, Grand Forks, North Dakota.

ESTIMATOR FOR Steel Erection. Quantity survey and pricing. Starting salary $8000 per year plus bonus. Location Northern New Jersey. P-1481, Engineering News-Record.

(Continued on page 99)

DESIGNERS — ENGINEERS

The Arthur G. McKee and Company are in need of men with experience as:

STRUCTURAL DESIGNERS
CONCRETE DESIGNERS
ELECTRICAL DESIGNERS
PIPING DESIGNERS
CHECKERS

Men should have experience in Blast Furnace, Steel Mill, Oil Refinery or other heavy structural design.

We pay among the highest rates in the industry. In addition our employees share anually in company profits.

Positions are available in our main offices at Cleveland, Ohio; or our branch ofices at Union, New Jersey, and Tulsa, Oklahoma.

Excellent working conditions in modern, well-lighted offices.

Our continuous expansion and growth offers many fine future opportunities for men who desire to develop and advance.

Write

Arthur G. McKee & Co.

2300 Chester Avenue — Cleveland 1, Ohio

ENGINEERS

ELECTRICAL - MECHANICAL - STRUCTURAL

Openings in Ohio and New York offices offering long term employment with good salary for qualified Group Leaders, Designers and Draftsmen experienced in one or more of the following phases of industrial plant design:

Electrical — Power, lighting layouts and electrical controls.

Mechanical — Plant layout, process piping, conveyors, heating and ventilation, boiler houses, process equipment layout, refrigeration, plumbing, tanks and vessels, packaging equipment, special machinery and equipment.

Structural — Structural steel and reinforced concrete.

Please submit complete resume stating experience, education, salary required and availability date.

THE H. K. FERGUSON COMPANY
Engineers and Builders

The Ferguson Bldg. 1783 E. 11th St., Cleveland 14, Ohio
19 Rector Street, New York 6, N. Y.

DRAFTSMEN • DESIGNERS • ENGINEERS

needed for essential work on the national Atomic Energy Program at

THE LOS ALAMOS SCIENTIFIC LABORATORY

Los Alamos, New Mexico

operated by the

UNIVERSITY OF CALIFORNIA

for the

Atomic Energy Commission

In The Mountains of Northern New Mexico

- 2 DAYS CUMULATIVE PAID VACATION PER MONTH
- 1½ DAYS CUMULATIVE PAID SICK LEAVE PER MONTH
- HOUSING AVAILABLE AT REASONABLE RENTAL
- MOVING EXPENSES PAID

Write to

E. W. Doty, Los Alamos Scientific Laboratory,

Los Alamos, New Mexico

CONSTRUCTION SUPERINTENDENT

Experienced in construction of Blast Furnaces and Open Hearth Plants. Must be a good organizer, able to handle labor and qualified to exercise executive ability. Compensation commensurate with ability of individual.

Write and furnish full information regarding education, training, chronological details of experience, age, salary expected, etc. All replies will be considered strictly confidential.

P-1512, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

BUILDING MATERIALS OPERATIONS EXECUTIVE

$20,000—$25,000

Well established, multimillion dollar midwestern construction materials company producing stone, sand, gravel and lime seeks thoroughly experienced operating executive to head expanding division. This is a top management position. Requirements: Engineering background and full knowledge of production, Purchasing, marine and ready-mix operations desirable. Salary commensurate with ability. Preferred age range: 38 to 50. Replies should give age, background, experience and salary requirement. Answers will be kept in strict confidence.

P-1497, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

GOOD POSITIONS FOR ENGINEERS, DETAILERS AND DRAFTSMEN

On Sewage, Water, Highway and Traffic Projects

Apply to

GANNETT FLEMING CORDDRY & CARPENTER, INC.

Harrisburg, Pa.

WANTED

ENGINEERS

. . . to train as . . .

Industrial Consultants in Fire Protection Engineering

full pay to start—complete training field engineering with top U. S. and Canadian industry—usual pension and other benefits. Permanent.

Write complete qualifications to

P-9609, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

SHEET PILING SALESMAN

Extensive Contacts With Users Either For Rent Or Sale Necessary

SW-1350, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

REINFORCED CONCRETE

Unusual opportunity for competent, experienced Superintendent. Must be aggressive and cost-conscious. Write promptly detailed account of experience, with special emphasis on reinforced concrete frame structures. Salary open.

P-1291, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

DESIGNERS, DRAFTSMEN, ELECTRICAL - MECHANICAL - STRUCTURAL. JOB LOCATED IN MIDDLE WEST. EXCELLENT WORKING CONDITIONS. GOOD SALARY. OLD ESTABLISHED COMPANY.

P-9872, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

INSTRUCTORS WANTED: TEACHING POSITIONS:

(1) Instructor for mechanics and surveying. Salary not to exceed $3,000.00 for nine months.
(2) Assistant Professor for highways and highway research. Salary up to $4,800.00 for twelve months. Write

Civil Engineering Department, Mississippi State College, State College, Mississippi.

WANTED

Graduate Mechanical Engineer

With broad experience—product and plant engineering, sales administration and organization. Splendid opportunity with small growing company in Cleveland. Write full details, age, experience, salary requirements. Replies confidential.

P-1463, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WANTED

REGISTERED CIVIL ENGINEER

The majority of the work on highway and sewer design. $5890 to $6610 per year. Submit a complete brochure of your experience and training. Apply to the Civil Service Office, City of Dearborn, Michigan.

WANTED PAPER MILL ENGINEER

Established paper mill in central Wisconsin has opening on Engineering Staff for trained Civil Engineer. Experience desirable, but recent graduate will be considered.

Furnish references and details of experience and training. Excellent opportunity in a progressive organization.

P-1483, Engineering News-Record
330 W. 42nd St., N. Y. 18, N. Y.

When Answering

BOX NUMBERS . . .

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

MECHANICAL ENGINEER

Degree. Experienced in construction and plant lay-out to supervise the design of installation of large diesel engines. Requires knowledge of structures, foundations, cooling and ventilation systems. Also internal combustion engines, switchgear, etc. Middle West. Reply stating education, experience, salary desire.

P-1523, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

DESIGNERS AND DRAFTSMEN

Mechanical, Structural with concrete structural or gas piping experience. Permanent employment, good working conditions, vacation, hospitalization, retirement plan, other benefits. Will pay transportation to location. Address reply to

TEXAS GAS TRANSMISSION CORP.
Box 577, Owensboro, Kentucky

POSITIONS VACANT
(Continued from page 97)

MIDWEST ENGINEERING firm needs Consulting Engineer. Prefer over 40 years of age, graduate, qualified for registration several states, varied experience. Either salary or fee basis. Permanent position or association. Furnish complete qualifications. Reply P-1516, Engineering News-Record.

POSITIONS WANTED

NOTICE: MECHANICAL man available. Would like to make a connection with large mechanical contractor or large building or engineer type contractor that is interested in setting up a mechanical dept. I am sober, married, and have one child. My experience consists of about 25 years in the plumbing heating, ventilating, process piping, and high pressure steam installations on such high type buildings as hospitals, office, industrial plants, water treatment and power plants, Dams, and mass production of large housing projects. Also as labor, material takeoff supervision, expediting, detailing layout and dept. head. My material connections are excellent. I also have a large man power following as material takeoff and supervisors and expeditors. PW-1429, Engineering News-Record.

CIVIL ENGINEERING Graduate, 40, 15 years experience field and office construction, location of highways; construction, division maintenance of railroads; public works. Some estimating and design experience. Desire position in private industry. PW-1432, Engineering News-Record.

GENERAL FOREMAN. Age 40, desires position in Latin America. Proven experience in all types of welded steel construction. Previous Latin American experience. PW-1356, Engineering News-Record.

DIVER-FRANK HEFLING, formerly Chf. S.F. US or foreign work. Passport. Capable deep water. 17 yrs. const. salvage, surveys, special jobs outfitted. Recond underwater torch. Modern phones, safety power compressor, single unit lifeline. Experience designer air lift, dredging, excavating, dewatering. Miami, Fla., 268 S.W. 8th St. Phone 3-8089.

CIVIL ENGINEER, P.E., 30 years engineering and architectural experience all types of heavy construction, housing, commercial structures, private and Government work. Design, bidding, contract negotiations, specifications, estimating, field and office supervision. Some foreign experience, languages. Wishes domestic or foreign assignment with owner, architect, builder or contractor where business experience and mature judgment are required. PW-1352, Engineering News-Record.

SPECIFICATION WRITER with broad experience in preparation of contract documents; 28 years' engineering and construction; both engineering and law degrees. PW-1451, Engineering News-Record.

PROJECT MANAGER or General Superintendent. 17 years heavy and industrial construction. Administration and operations, U. S. and Foreign. B.S. in C.E., age 39, health excellent. Interested in top position with reliable concern. PW-1464, Engineering News-Record.

SALARIED POSITIONS $3,500—$35,000

We offer the original personal employment service (established 41 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

R. W. BIXBY, Inc., 272 Ellicott Bldg., Buffalo 2, N.Y.

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Fortieth Year

OUR COURSES HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations

- Complete Structural Engineering Course.
- Public Works Structures.
- Architectural Engineering.
- Special Course C (State Board Exams).
- Reinforced Concrete Engineering.
- Structural Steel Designing.

Monthly payments permissible. Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION

College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

POSITIONS WANTED

GENERAL SUPERINTENDENT or Project Manager. Thirty years buildings and heavy construction. Executive, organizer, coordinator. Full responsibility, handle all details of General Contracting. Seeking connection where scope permits full use of ability. PW-1445, Engineering News-Record.

PROJECT MANAGER, Project Engineer, Heavy construction, Airfields, Tunnels, heavy foundations. Underpinning all types piles and sheeting rock and earth excavation. PW-1511, Engineering News-Record.

BUSINESS OPPORTUNITIES

Dock Building Business for Sale.
Malcolm Davis, Nokomis, Florida.

Large Mechanical Corporation
with quarter million in equipment and tools for Plumbing, Heating, Ventilating and Sheet Metal work; with excellent Estimating, Supervising, and Purchasing Departments; good material connection; wide experience in the field of Power Plants, Water Treatment Plants, Government Housing, Hospitals, and Office Buildings, desires to make connection with reliable large General Building and Engineering Contractor. Object—Expansion. Location no object. Reply BO-1474, Engineering News-Record.

PATENT ATTORNEY

CONSULT: Z. H. POLACHEK.
Reg. Patent Attorney, 1234 Broadway, New York 1, N. Y.

WANTED

Large engineering firm wishes to acquire several complete plants through purchase of (1) capital stock, (2) assets, (3) machinery and equipment, whole or in part. Personnel retained where possible, strictest confidence.

Box 1206
1474 Broadway New York 18, N. Y.

WANTED
AIR COMPRESSORS
VACUUM PUMPS & STEAM BOOSTERS
L. W. BAUER
22 Barnett St. Bloomfield, N. J.

WANTED
4,000 linear feet 28" or 30" Ventilation Pipe.
20,000 cft. min. Blower, without Motor.
The Savin Construction Corp.
10 Village Street
E. Hartford, Connecticut (8)

BOOM WANTED
For
Northwest Model 8
60 to 100 ft.
Advise location &
price

W-1506, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

WANTED
1-ORE CAR
Great Northern Twin Hopper U7
40 ton capacity
Bottom dump-motorized

W-1492, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

WANTED
Surplus Inventories of
Alloy Steel Bars
LONGWOOD SUPPLY CO.
Route #1 Plainville, Mass.
North Attleboro 8-1611

FOR SALE

2—4 c.y. Rex Mixers mounted on K-11 Internationals.
1—4 c.y. Ransome Mixer mounted on K-11 Internationals.
1—Late model 4½ c.y. mixer mounted on L-210 Tandem rear late model International Chassee.

These trucks are for sale as one unit or as separate units.

The above equipment is in excellent condition and is working at present but is subject to immediate release.

BUILDER'S CONCRETE, INC.
North Windham Road Willimantic, Conn.
Tel. Willimantic 3-6218
Write: P.O. Box 173, Willimantic, Conn.

STRUCTURAL STEEL ERECTION

Buildings, Bridges, and Power Houses 40 derricks and hoists—24 cranes available

Large quantities of erection equipment

KARL KOCH ERECTING CO., INC.
362 CASANOVA ST. *Kilpatrick 2-3800* BRONX 59, N. Y.

DRYER or KILN: Allis Chalmers 10 ft. x 90 ft., heavy duty, plate thickness 22.95 lbs. per sq. ft., NEW condition, complete and with or without coal fired Furnace, Western Precipitation Dust Collector, Clarage #41 Exhauster, Motors, Control equipment, etc. 1—90" x 80 ft., single shell, new condition. 1—Kiln 72" x 44 ft. with 48" x 46' Cooler, NEW condition.

COMPRESSOR: Worthington 2 stage, 29/18½ x 21, 600 H.P. synchronous motor, 3 phase, 60 cycle, 440 volt, 180 RPM, cap. 3000 CFM, 100 lbs. pressure, complete with auxiliary equipment. In operation now, available immediately.

LOG WASHER: 25 ft., heavy duty type, with 2 legs, 6" x 6" x ¾" angles, complete, ready to operate.

LOG GRAPPLE: Blaw Knox, jaws 42" wide, opening 8'9".

BOOT BUCKET ELEVATORS: 2—63 ft. c-c, manganese steel chain, buckets 18" wide.

SCREW CONVEYOR: 12" x 22 ft. with center bearing, 87 RPM, capacity 30 TPH.

BIT DRESSER: Bucyrus Erie model 12 for bits 6" to 12". This is a complete forge shop with furnaces, jib crane, 500 lb. air hoists, all auxiliary equipment and portable steel building 36 x 36 with cupola.

BLAST HOLE DRILL: Bucyrus Erie 27-T, diesel, 6⅜" bits.

WAGON DRILL: Ingersoll Rand type D with X71 WD Drifter for 1¼" steel, with D-6-U hoist, mounted on steel wheels.

TRUCKS: Euclid 15 yd., model T, end dump, 32 ton capacity, 275 H.P. Cummins motors.

DIESEL MOTOR: 122 H.P. Caterpillar D13000 complete with clutch, V-belt pulley and spare parts.

BOILERS: 1—Erie City 150 H.P., ASME, return tubular, 4" tubes, 150 lbs. working pressure, pin hole grates and all fittings. 2—220 H.P., 180 lbs. pressure, National Board, 3 drum, low head, complete.

CRAWLER CRANE: Electric 1¾ yd. capacity, 60 ft. boom, old model, excellent condition. A real bargain. 1—Lima 1001 and 1—Speed Crane model 3000 with 75' boom, long cats.

STEAM SHOVEL & CRANE: Bucyrus Erie model 50-B, ASME oil fired boiler, 65 ft. boom.

DRAG SCRAPERS: 1—Sauerman 2 yd. Drag Scraper outfit, complete, without 75 H.P. motor. 1—Sauerman ¾ yd. capacity complete with 30 H.P. motor. 1—Sauerman 1½ yd. capacity complete with 60 H.P. motor.

BRIQUETTING PRESS: Capacity 18 tons per hour, 33" dia. rolls.

MINE HOISTS: Single and double drum 150 H.P. to 1500 H.P.

CRUSHERS, GYRATORY: Various makes, size 12" x 44" to 42" x 134".

CRUSHERS, JAW: Various makes, 12" x 15" to 48" x 60".

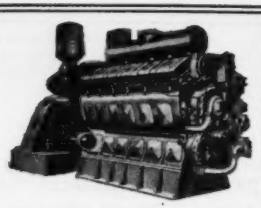
CRUSHERS, REDUCTION: Symons 2 ft. Cone, standard bowl. Telsmith 2 ft. and 3 ft. Gyrasphere. Trayor 4 ft., type TY. Austin Western 4" x 40".

COAL CRUSHER: Jeffrey Flextooth size 24 x 42".

FEEDERS: Syntron F5-500 Vibratory Grizzley, 48" x 10'11", with four vibrators. NEW condition. Syntron F55 Vibratory Pan Feeder, 36" x 78" flat pan trough. NEW, UNUSED. Both above with control equipment. Manganese Apron Feeder 44" x 16 ft. complete, NEW condition.

A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: Madison 3-8300—3-8301

DIESEL POWER
FOR
IMMEDIATE SHIPMENT



UNIT CAPACITIES—10 TO 1875 KVA
A.C.—50 AND 60 CYCLES
VARIOUS VOLTAGE

A PARTIAL LISTING OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	33F16	2000	300	375	Enterprise	DSG-6	450	450
1420	Fairbanks Morse	38D8⅛	1000	720	330	Superior	KNA	396	514
1250	General Motors	16-278A	1600	720	312	General Motors	8-268A	450	1200
937.5	General Motors	12-567	1080	720	312	Clark	MD-4	375	327
625	Alco	6-12½x13T	780	600	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6043C	90	1200
400	Buckeye	80	480	600	62.5	Int'l Harvester	UD-18	76	1200

D.C. UNITS ALSO AVAILABLE

A. G. SCHOONMAKER COMPANY, INC.
DIESEL DIVISION, 50 CHURCH ST., NEW YORK 7, N. Y.

• STRUCTURAL STEEL SHAPES •
New and Used—Immediate Delivery

At present our inventory of steel shapes and forms includes a full line of both new and used steel especially for heavy construction work. 4" I beam to 36" Girder Beam. 14" Columns 287#/398#

BEARING PILE SECTION

Stock list on request. Write, wire or phone.

HY DRACHMAN STEEL CORPORATION

Warehouse: 14-23 34th Ave., Astoria L. I., N. Y. Astoria 8-8023; 8-4484-5
Sales Office: 563 E. Tremont Ave., New York City, N. Y. Cypress 9-5440-1

SHOVELS—CRANES—DRAGLINES
P&H 255A 20 Ton Truck Crane. Excellent.
Koehring 304 20 Ton Truck Crane. Excellent.
Michigan TLDT Truck Crane 12 Tons. 8m 50'.
Northwest Model 6, 1½ yd. Diesel Shovel.
Lorain 820, 1¾ yd. Shovel-Crane, Diesel, 1947.
Michigan ⅛ yd. Truckcrane-Backhoe-Crane-Drag.
Koehring 605 1½ yd. Diesel Shovel.
Marion Model 382, 1½ yd. Dragline, Diesel.
Lima 1201 std. Diesel Shovel, 3½ yds.
Buc-Erie 1 ¼ yd. Shovel-Crane-Dragline, Diesel.
P&H 855, 2 yd. Diesel Shovel.
Link-Belt K-580, Diesel Shovel, 3 yds.
Koehring 604 Crane-Dragline 1½ yd. Diesel.
Link-Belt K-595 Dragline, 2½ yds. Diesel.
Lima 34, Paymaster, ¾ yd. Diesel Shovel. Excellent.

CONCRETE PLANTS—BINS & SILOS
B-K 400 Bbls. Cement, 125 Tons Agg. Complete.
Erie-Strayer ¾ yd. and 1 yd. Plants.
Mixer-mobile Plant. Complete for full operation.
Cement Silo 1575 Bbls. C. S. Johnson.
B-K 300 ton 3 compt. aggre. 250 bbl. cement.
B-K 110 bbl. bulk cement bin Richardson scales.
Johnson 4-compt. agg. 2 Cement, 4 yd. batcher with 888 bbl. bulk cement silo.

ASPHALT PLANTS
B-G Model FA, 1½ ton, Port. Diesel.
Hetherington-Berner Heavy Duty Moto-Paver.
Model M-20 Bituminous Monotrol Plant.
Cedar Rapids Travel Mix Plant 100-150 tons.
B-G Model 848 "Travel Plant".
B-G 842 Port. Utility Plant. Complete.
Littleford 1000 gal. Distributor on Int. Truck.

STIFF LEG AND GUY DERRICKS
Steel 35' stiff leg derrick 100' boom.
American 20 ton stiff leg derrick 90' boom.
Stiff leg derrick 15 ton 100 ft. boom.
American 20 ton Guy derrick 100 ft. boom.
Stiff Leg derrick 15 ton 65 ft. boom.

CONCRETE MIXERS AND PAVERS
Koehring 34-E Twin Batcher Paver.
2 Ransome 34-E Dual Drum Pavers Diesel.
Rex 28-S Builders Mixer, Elec. New 1947.
28-H Ransome Builders Mixer. Elec.
Koehring 56-S stationary Mixer. New '50.

RICHARD P. WALSH CO.
30 Church St. New York 7, N. Y.
Cable RICHWALSH COrtlandt 7-0723-4

BRIDGE
FOR SALE

Railroad Plate Girder Bridge now in use as Highway Bridge with temporary timber foot bridge for pedestrians on outside of one girder. Overall length 106'. Roadway width 11'. Clear width between girders at top 15'. Loading E40 at 18,000 pounds. Located Sault. Ste. Marie, Michigan. Available for shipment, September, 1951.

THE TULLER CONSTRUCTION CO.
RED BANK, NEW JERSEY

SALE OR RENT
1—Koehring 304 Truck Crane.
1—¾ Lorain 41 Comb S & D 1948.
1—¾ Northwest 25 Gas as Bhoe.
1—Michigan Crane, Bhoe, & Shovel mounted on 10 wheel carrier.
2—10 Ton steel Guy & Stiff leg Derricks.
2—6 Ton Huber 3W Rollers.
1—45' Crane Boom for Link Belt LS90.
1—15 Ton Orton Diesel Loco. Crane.
1—801 Koehring Shovel & Crane.
1—1¾ yd N.W. Shovel Mod. 70.
1—40 Ton Industrial Oil Fired Loco Crane 1943.
1—65 Ton 0-6-0 Saddle Tank Loco 1943.
6—50 Ton all steel Gondolas.

B. M. WEISS CO.
Girard Trust Co. Bldg. Phila 2, Pa.
Rittenhouse 6-2317

FOR SALE
New Wire Rope Blocks

18" Single 20 Ton with S. Shackle.... $25.00
18" 3-Sheave 30 Ton with Shackle.... 50.00
18" 4-Sheave 30 Ton with Shackle.... 75.00
#32 Drop Forge Hooks, New..... 2.00

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.

VULCAN
PILE HAMMERS AND EXTRACTORS
NEW OR FACTORY REBUILT
FOR SALE • • • FOR RENT
327 N. BELL AVE., CHICAGO, ILL.

FOR SALE OR RENT
Lorain 80 Diesel, Late model rebuilt, 1¾ cy Shovel & Dragline
P.&H. 850 Diesel, 2 cy Shovel & Dragline
International TD-18 & TD-14 Bulldozers
P.&H. 150 Truck Crane, 10 wheeler

BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 Tel: Canal 6-5693

L.B.SMITH INC.

OFFERS

AIR COMPRESSORS

Schramm 105 cubic foot gas powered compressor on 4 steel wheels.
Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
Gardner-Denver 160 cubic foot gas powered compressor on 4 steel wheels.
Worthington 210 cubic foot, two-stage, air-cooled, on steel wheels with Hercules diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

QUARRY EQUIPMENT & BINS

3033 Cedarapids Hammermill, Rebuilt.
10x7 Allis-Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
4' x 12' Tyler Niagara type 600, 3 deck.
4' x 6' Kennedy Van Saun single deck.
4' x 6' Kennedy Van Saun double deck.
42" x 24' revolving screen.
18" x 90' bucket elevator.
80-ton, 2-compartment, 8'x18' storage bin with clamshell gates.
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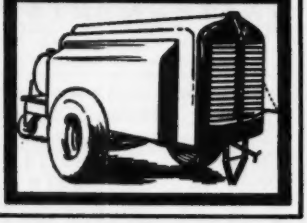

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1—63M Marion 2½ yd. Combination Shovel and Dragline with Caterpillar D-17000 Diesel Engine, 1500 Watt Light Plant, 2½ c. yd. Dipper, Dragline Boom with Fairlead, 14000 lb. Extra Counterweight. Machine is in good condition. Serial 8782.
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111M Marion, Combination Shovel, Dragline, 4 yd. Dipper, 80' Dragline Boom, Fairleads, Two General Motor-diesels. Good condition. New 1947. Serial 8808.
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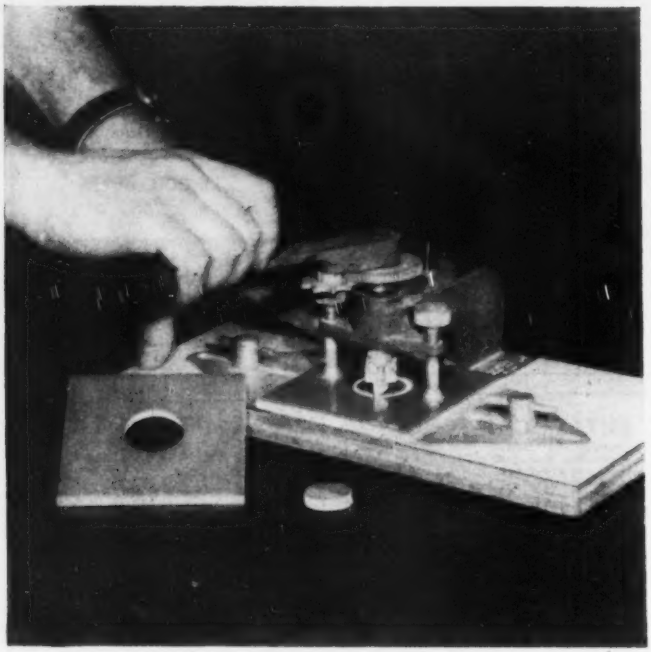
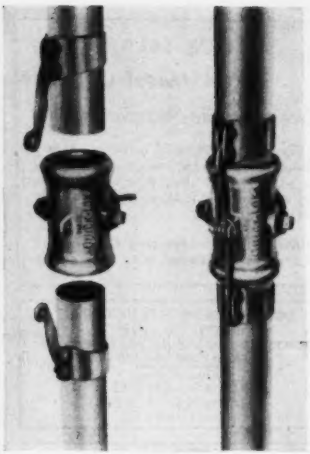


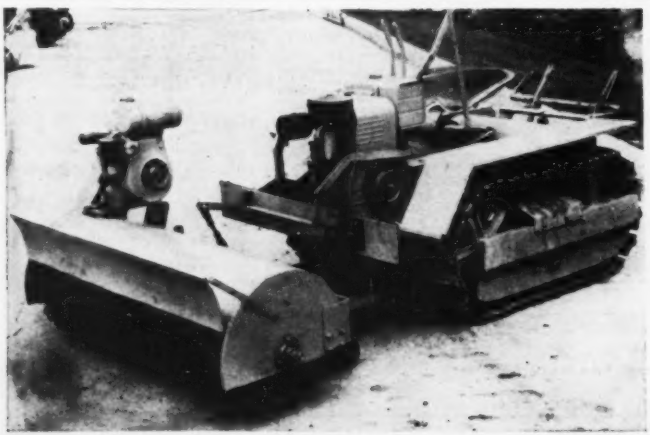
Cutter makes perfectly round hole in tile

Any tilesetter will tell you that scoring or halving a tile is no feat at all. Neither is chipping off a square corner to make it round. But ask him to chip out a round hole right in the middle of a tile and you'll quickly separate the men from the boys. Now they can all be men by using a new, small, portable, hand-operated machine called The Perfect Circle Tile Cutter. With the tile clamped to its 13 x 17-in metal base as shown above, each turn of the handle brings the cutter blade down 8/1000 of an inch as it traverses its pre-set radius from 1¼ to 2 inches. Average score-backed 4 x 4-in tiles are cut neatly in less than a minute. If a hole spans a joint between two tiles, they can be clamped to the base in similar manner with proper joint spacing. McLin & Grody, 4532 San Fernando Road, Glendale 1, California.



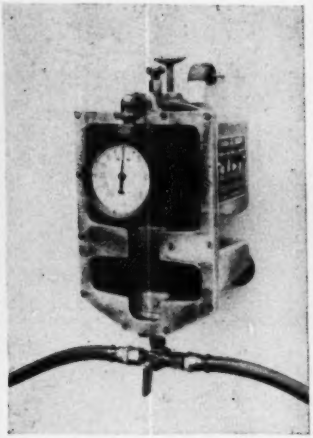
Pipe coupling that needs no tools

Forget about your wrenches, tongs and heavy connecting equipment and instead use the new quick-locking coupler equipment called Quick-Lok. According to its manufacturer, tests have proved that one man can lay as much as 1,000 ft of pipe an hour with the use of these couplings. Because of its fast setup ability, it should find a range of uses in the construction industry for carrying air or water under pressure as well as oil, gasoline or chemicals. Outlets are provided on each one for connecting laterals, bypasses, or access lines. Couplers, made of aluminum alloy, are tested to 300 psi. Two styles of gaskets are available, one of which is self-draining, and they're protected by the coupler lip against tearing or damage. R. M. Wade & Company, Portland, Oregon.



Just one more job for the Agricat

In the past, with its many attachments, the Agricat has been used for plowing, planting, light earthmoving, narrow ditch work and especially on sewer or small pipe line work. Its latest accessory is a rotary broom, with India-palm or wire bristles. Attached to the front end of the machine with special shafts, it's driven by an auxiliary 2 hp motor at speeds from 120 to 220 rpm, and controlled by the operator. The maker claims it's fine for snow removal as well as general clean-up work. Earl H. Pence & Company, Inc., 2150 Washington Avenue, San Leandro, California.



Fuel checker

A compact unit that hooks up with hoses to carburetor and gas line, the Rocklen Fuel Checker can test fuel pump flow and pressure, mileage, leaky or plugged gas lines, fuel level, pump diaphragms. Fuel can be stored in, or directed in or out of its small tank by manipulating a four-way control valve at the bottom. By removing the small pressure pump on the cover, it can be manually filled with fuel, making it possible to propel a car, truck, or other piece of equipment when the regular system is clogged, frozen or otherwise inoperative. E. J. Lush Inc., 207 Orange Street, New Haven, Conn.

Plastic cover plate

Giving up to 1000 hours of service, a hard, clear, almost colorless welding helmet window cover is made of thermosetting plastic, said to be superior to regular thermoplastics for this particular job. Cannot crack or shrink and will not discolor under normal welding conditions. More resistant to pitting than glass. American Optical Co., Southbridge, Mass.

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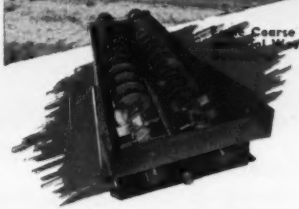
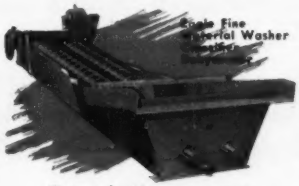
Micrometer-Comparator measures contraction or expansion of concrete specimens to variations as small as 0.0001 in. It is used to determine length changes of mortar or concrete specimens, and was produced for the U. S. Corps of Engineers, Portland District. The device will be used in connection with tests on chemical reactions, heat expansion, and resistance to weathering. The machine was produced for the Army by: Leupold & Stevens, Instruments, Inc., Portland, Ore.

(*Continued on next page*)

a good wash day EVERY DAY at Karl Hehl's gravel plant— with EAGLE Washers on the job!



Essential for today's demand for clean aggregates. Sizes to handle 90 to 350 tons per hour. Also single screw units.



Reject or retain fines at will by raising or lowering lips of U-shaped weir. Washes sand clean—delivers it free of excess moisture. Sizes 15 to 200 TPH.

Eagle Washers rule out "wash day blues" at the plant of Karl Hehl, Adams City, Colo. An Eagle double screw coarse material washer loosens and soaks pit-run material, washes it and delivers it dewatered to a vibrating screen. An Eagle double screw fine material washer, with adjustable long weir, washes, classifies and dehydrates sand which passes through the screen. A simple, economical, compact plant providing a range of readily marketed materials. Iowa Mfg. Co. designed the plant and made the "Cedarapids" conveyor, bins and screen. End "wash day blues" at your aggregate plant—send for Catalog 47.

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Two rivet-pliers

They simplify and speed up replacement of side shields on spectacle type safety goggles.

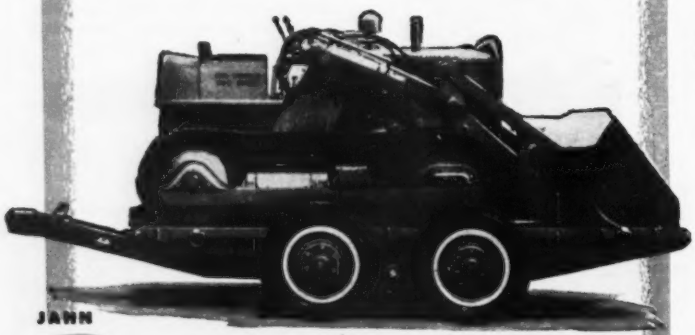
The first, called the 169 Rivet Knockout Plier, has a pointed jaw which pushes out the rivet while the other jaw holds it rigid. Removal is straight, so that the rivet cannot bend, enlarge its hole or damage the frame. The 170 Riveting plier is equally rapid. One jaw guides the rivet; the other blunt end flattens it accurately. Carefully placed fulcrum produces maximum leverage with slight hand pressure. AMERICAN OPTICAL COMPANY, SOUTHBRIDGE, MASSACHUSETTS.

Versatile Loadster

Year-round use can be had with this Model LM 75 machine by adding attachments: Crane hook, fork, snow plow or dozer blade. Rapid tilt-back on bucket permits carrying of heap loads even at low point, says maker. Fifth gear travel is 15 mph. At full arm height of 5 ft 7 in, crane hook attachment will hold over 3300 lb. With bucket straight ahead, maximum outside turning radius is 16 ft. CONTRACTORS MACHINERY COMPANY INC., BATAVIA, NEW YORK.

(*Continued on page 113*)

F.O.B. NEXT JOB



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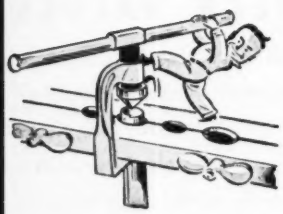
to help conserve copper water tube

HOW TO FLARE TUBE

Flaring of tube is one of the most important operations in making joints or connections.

A word of caution. After cutting tube to length, do not disregard the burr resulting from cutting operation. The thin burr section is the first to be cold-worked during the flaring operation and tends to cause cracking of tube. A crack, once started, travels into and through the tube wall, leaving whole flared section useless.

Always cut tube to length with hacksaw or tube cutter. Be sure to remove burr with knife or sharp cutting edge. Accomplish actual flaring by using good standard flaring tool. Result: a clean, perfect flare, which will contribute to a leak-proof joint and a good, sound connection.



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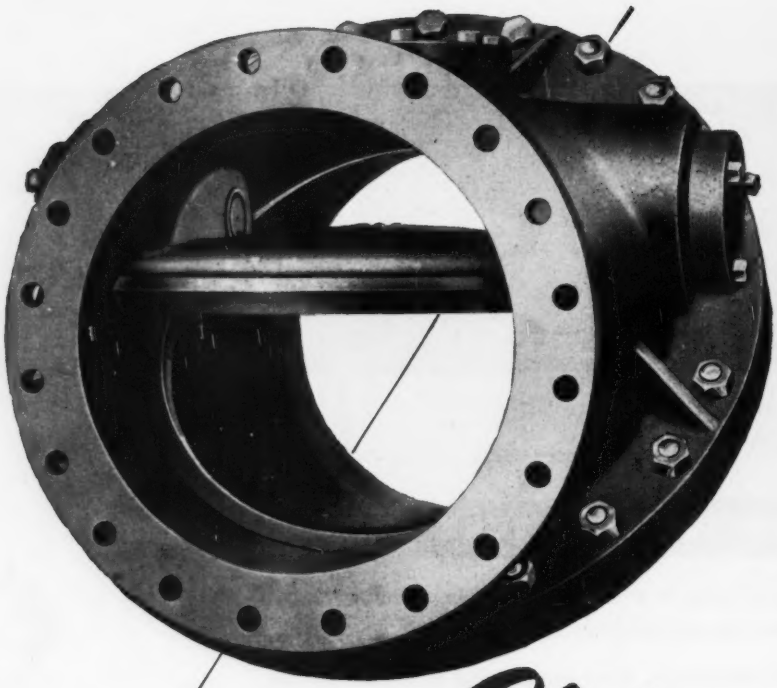
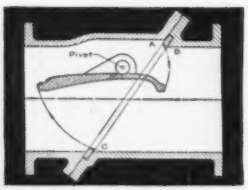


YOU GET *Cushioned Closing* WITH CHAPMAN

TILTING DISC CHECK VALVES



Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

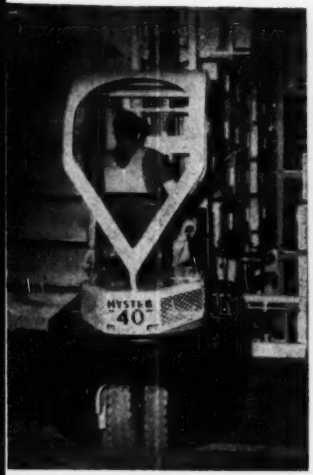
There's no impact on closing — with this valve by Chapman. The balanced disc rides the flow smoothly — uses the fluid or gas itself to cushion the closing action. The disc lifts away from the seat easily on opening; closes quickly, positively—yet quietly.

Consequently, there's no rubbing on the seats—little wear on hinge pins and bearings. Repair needs are at a minimum — maintenance costs low.

Chapman Tilting Disc Check Valves are available in either iron or steel. Write today for catalog with complete technical information.

The Chapman Valve Manufacturing Company
INDIAN ORCHARD, MASSACHUSETTS

New Products . . .



Dual wheels ease steering of fork lifts

Almost effortless steering is the result of an improved wheel design on Hyster fork lifts, the company says. Dual wheels on the steering trunnion are standard equipment now on all YT-40 models coming off the assembly line, and present single-wheel rigs can be converted easily. Tire service and maintenance is possible by merely removing one easily accessible lock stud. Size has been reduced to 6.00 x 9 on these 4,000-lb capacity rigs for interchange with tires on Model 20 2,000-pounders. The new design also reduces steering mechanism gear ratio from 31 to 1 down to 20.7 to 1. Company claims less driver fatigue resulting automatically in more materials handling. HYSTER COMPANY, 2902 N. E. CLACKAMAS ST., PORTLAND 8, OREGON.

Magnetic outlet finder works on magnetic draw principle and locates concealed outlets in steel underfloor raceways. Moved about by hand on wood, concrete or linoleum, "draw" increases when finder passes over steel duct and develops maximum pull when centered directly over outlet. 2¼ in. high and 2¼ in. dia. **National Electric Products Corp.**, Chamber of Commerce Bldg., Pittsburgh 19, Pa.

Three new **fluorescent ballasts** made by **General Electric Co.**, Schenectady 5, N. Y., are appreciably smaller, lighter, and have improved sound ratings. All are listed by Underwriters Laboratories and certified by Electrical Testing Laboratories.

(*Continued on next page*)

1 of 10 Reasons Why UNIT is a Better Machine

UNIT gears, shafts, and many other essential working parts are scientifically heat-treated right at the factory, under the supervision of experts — men who work exclusively on these important operations. Fully equipped, the UNIT heat-treat department includes five, accurate, thermostatically-controlled electric furnaces, where these vital parts are made hard enough, yet tough enough to stand up under the most severe service. Aside from the electric furnaces, there are two completely automatic, flame-hardening machines (illustrated above) — the last word in modern equipment. The split-second, precision control of these machines permits selective hardening — giving each gear the same consistent hardness, strength, and ruggedness. Heat-treated gears and shafts are another example of the "quality extras" that are yours when you choose UNIT — the undisputed leader in producing the most efficient and economical cranes and shovels in the industry.

This is the 9th of a series of 10 ads describing outstanding UNIT features.

UNIT CRANE & SHOVEL CORP., 6315W. Burnham St., Milwaukee 14, Wis., U.S.A.

Crawler and Mobile models — ⅓ and ¾ Yd. Excavators. Cranes up to 20 tons capacity.

SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS

EPPINGER AND RUSSELL CO.

Wood Preservers Since 1878

80 Eighth Ave., New York 11, N. Y.

PRESSURE TREATED

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WITH

Creosote or Chromated Zinc Chloride

TREATING PLANTS

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"GUNITE"

NEW CONSTRUCTION AND REPAIRS

- Prestressed Tanks
- Repair all Types Disintegrated Concrete
- Dam Reconstruction and Repairs
- Linings and Repairs to Reservoirs, Stacks, Bunkers, Sewers, Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

Nationwide Operations—Experienced Personnel

Write for our new 44 page Bulletin

PRESSURE CONCRETE CO.

"Gunite" Contractors and Engineers

193 Emmett Street, Newark 5, New Jersey — So. Court Street, Florence, Alabama

33 N. LaSalle St., Chicago 2, Ill. — Liberty Life Bldg., Charlotte, North Carolina

FOR WANT OF A NAIL
a kingdom was lost

Everybody knows about the lost nail, lost horse-shoe, lost kingdom. Wire rope users know that for want of a cutter they have lost time, lost profit, lost business. At the crucial moment when wire rope must be cut, spliced or threaded the handiest thing to have around is the . . .

MORSE-STARRETT
WIRE ROPE CUTTER

SIMPLE Anyone who can swing a hammer makes perfect cut.

EASY to put where you want it. No. 1 model weighs nine pounds.

FAST cutting assured by precision engineered blade and dies.

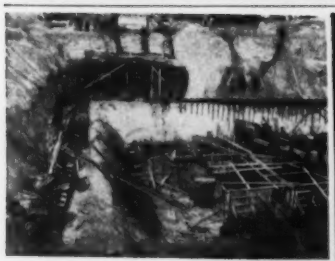
CLEAN cut, no frayed or jagged wire, perfect threading or splicing.

SAFE enclosed, locked-in cutting blade prevents accidents.

THREE SIZES, WITH CUTTING CAPACITIES UP TO 1" — 1-1/16" — 1-1/2"

SEE YOUR DEALER OR WRITE DEPT. "B"

MORSE-STARRETT PRODUCTS COMPANY
1204 - 49th AVENUE, OAKLAND 1, CALIFORNIA



25 YEARS EXPERIENCE
for SATISFACTION
CALL FOUNDATION
WELLPOINT SYSTEMS
RENTAL • SALES
SEND FOR LITERATURE

Sewage Disposal Plant, Long Beach, L. I., N. Y.—Foundation's wellpoints dried up site permitting Horn Constr. Co. to work 20'-24' below water elevation.

Foundation Equipment
CORPORATION
Long Island City 1, N. Y. Ravenswood 9-0590
Chicago, Illinois Hilltop 5-1545

New Products . . .

Lifter keeps work at proper height

The new piece of positioning equipment above, called the Working Height Lifter, is sure to find favor in many industries by reducing lost time, fatigue and injuries which accompany manual lifting and lowering of loads. Power is obtained from a ¾ hp A.C. 110-V motor, connected by a 15-ft cord to remote pedal switches which lift, stop and lower the load. This motor delivers oil to a hydraulic lifting ram, and a flow regulator valve controls lowering of the platform at a safe uniform speed regardless of load conditions. Made for 4,000 lb capacity, the Lifter is 72 in. high overall, with 42-in. lifting height. Platform lengths are 36, 42, 48, or 54 in.; widths, 32 or 38 in. Platform can be lowered to the floor to receive pallets or skids from fork lifts or jack lifts. Foot switches are locking type for lifting and deadman type for lowering. By locking its pan at proper level, the Lifter can be relocated readily and easily with a fork lift truck. LEWIS SHEPARD PRODUCTS, INC., WATERTOWN, MASS.

A Department of Information Services has been formed by **Westinghouse Electric Corp.**, Pittsburgh, Pa., to handle all functions of public relations, employee relations and related activities.

New series of **heavy duty engine oils**, Ursa Oil X Sup. One 10, 20, 30, 40 and 50 now marketed by **The Texas Company**, New York, for lubrication of heavy-duty gasoline engines and automotive-type diesel engines which are operated under adverse conditions. They give satisfactory protection against diesel fuels with 1.0% or more sulfur content.

(*Continued on page 117*)

Save Top Carrier ROLLS

with

STOODY 1027

Don't throw top carrier rolls away! They're too hard to get these days. When the tractor is down for repairs to track, sprockets, idlers or rollers—rebuild top rolls with Stoody 1027.

Stoody 1027 gives longer service, resists the wearing of flat spots when rolls freeze up with mud. Rolls should be rebuilt before too serious wear occurs.

See your Stoody dealer . . . or write for folder on welding procedure for top carrier rolls.

STOODY COMPANY

11976 EAST SLAUSON AVENUE, WHITTIER, CALIFORNIA

Tied up with endless repair details?

THE fastest possible way to hog-tie a fleet operation is to overlook the major cause of countless minor repair jobs—improper lubrication. Usually a really fine motor oil, like Quaker State HD Oil, can check this trouble.

Quaker State HD Oil, especially tailored for heavy-duty use, goes a long way in reducing annoying repair jobs caused by excessive engine wear. This top-quality oil, refined with the most modern processing equipment is compounded with chemical detergents of highest quality.

Made from 100% pure Pennsylvania grade crude oil, Quaker State HD Oil keeps its body, lubricates thoroughly, protects fully, cushions every friction surface and prevents the formation of sludge, gum and varnish. It actually cleans as it lubricates. Try it in your equipment soon: watch operating costs drop.

QUAKER STATE HD OIL
AND SUPERFINE LUBRICANTS

QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PA.

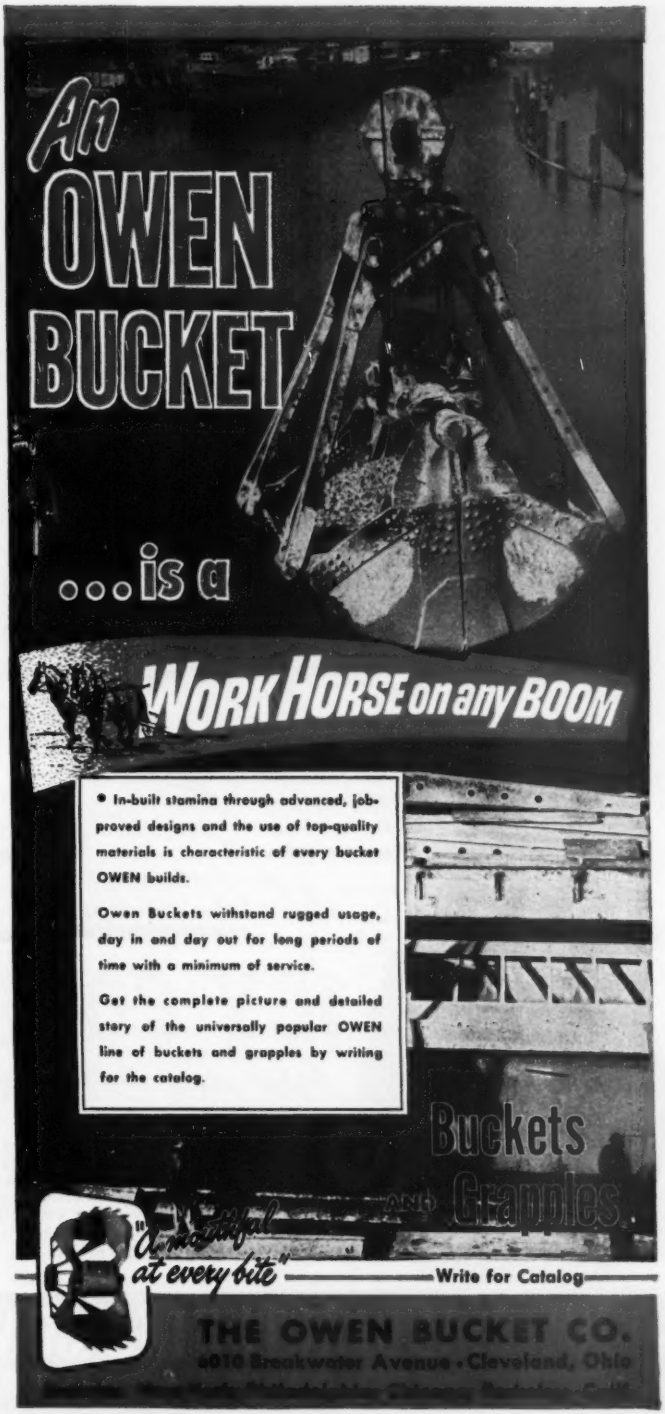
New products . . .

Portable pipe threader

If you're currently using a set of standard die stocks for threading pipe on the job or in the shop, you can use them in this new light weight portable power pipe threader called the Port-A-Pony. Developed for threading ¼-in. to 4-in. pipe, the machine weighs only 26 lb., and is easily handled by one man. Powered by a reversible ½-hp 110-v AC or DC motor it cuts threads anywhere that there's a 12-inch working area, according to its manufacturer. Because of its ability to work in small places, it's highly adaptable for cutting stationary pipe in narrow ditches, well pits, trenches, or in overhead areas within five inches of any wall. Thread-Ezy Mfg. Co., Corunna, Michigan.

Lifter works by suction

Usable on all non-porous, rigid materials—metal, glass, fibre, plastic, linoleum, tile etc; on flat or curved surfaces, this Ipco safety parts lifter handles cups with 1½, 2½ or 4-in. diameters. By slapping the lifter on an object to be picked up, a vacuum is produced which can be released only by depressing a thumb lever. Excellent for feeding small parts to a saw, grinder, machine or the like. Industrial Products Company, 2989 N. Fourth Street, Phila. 33, Pa.


An
OWEN
BUCKET
...is a
WORK HORSE on any BOOM
• In-built stamina through advanced, job-proved designs and the use of top-quality materials is characteristic of every bucket OWEN builds.
Owen Buckets withstand rugged usage, day in and day out for long periods of time with a minimum of service.
Get the complete picture and detailed story of the universally popular OWEN line of buckets and grapples by writing for the catalog.
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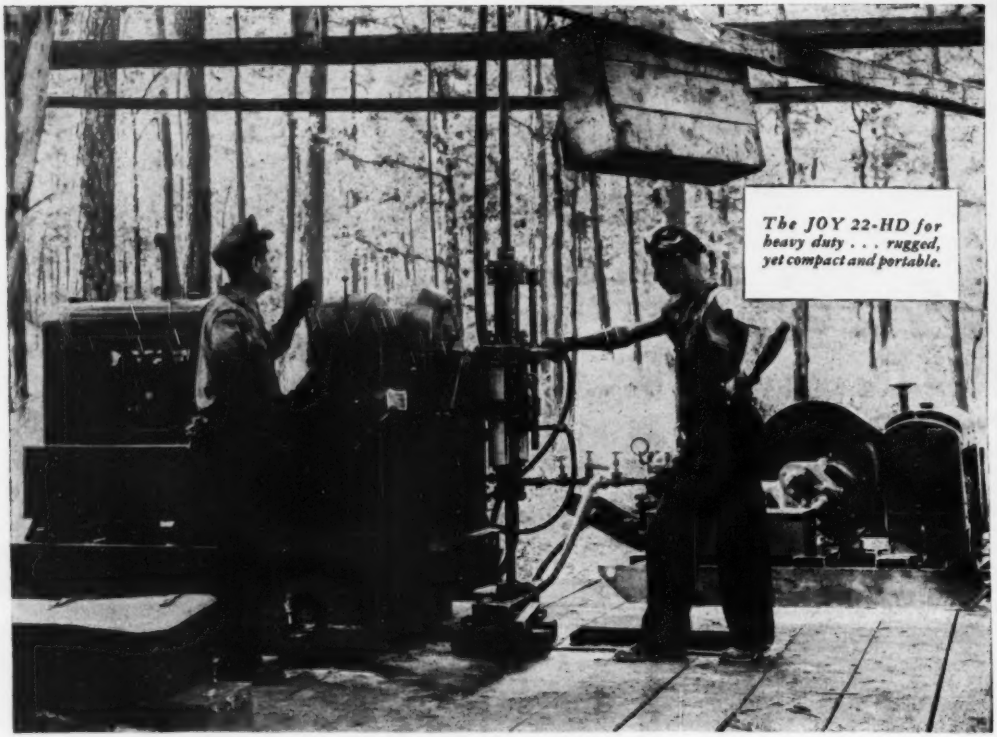
Grapples
"A mouthful at every bite"
Write for Catalog
THE OWEN BUCKET CO.
6010 Breakwater Avenue • Cleveland, Ohio



The JOY 22-HD for heavy duty . . . rugged, yet compact and portable.

Get TRUE Cores FAST—and at LOWEST COST

The JOY No. 12 Lightweight Core Drill.

JOY CORE DRILLS

FOR ALL EXPLORATORY WORK

JOY Core Drills give you fast drilling in all types of formations, and accurate cores at the absolute minimum in cost—the prime essentials for exploratory work. Compact design and the use of modern alloys makes them light in weight and highly portable . . . your best selection in the field. ***Write for bulletin.***

Consult a Joy Engineer

W&D G 3084

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

MANUFACTURERS' PUBLICATIONS

Luminous acoustical ceilings—Drawing and diagrams, as well as architectural and engineering data fill this spirally-bound 34-page book. Describing the product's conception, principles, development and applications, it contains complete sketches of structural and electrical systems. Installation instructions are clear, and well illustrated. F. W. WAKEFIELD BRASS CO., VERMILION, OHIO.

Excavators—Starting with Model 33H, a standard ¾-yd shovel, this 32-page, two-color Bulletin No. 403 shows working views of the entire line of Marion machines along with crane-lifting capacities, condensed specifications, and types of service to which the machines can be converted—shovel, clamshell, dragline, crane, backhoe, pile driver, coal loader, etc. Write to any sales representative, distributor, or MARION POWER SHOVEL COMPANY, MARION, OHIO.

Hard-facing electrodes—Proper applications of new line of Wear-Arc hard-facing alloy electrodes are described in this booklet for many industries, with a special section on construction, excavation and dredging machinery parts. ALLOY RODS COMPANY, YORK, PENNSYLVANIA.

Heat-resistant paints made by **Speco, Inc., 7308 Associate Avenue, Cleveland 9, Ohio** are described on a single-sheet bulletin. Application and product data for five kinds of paint are listed.

Vertical turbine-type pumps—Catalog 7228 describes this APH-APK line, available in single- or multi-stage construction from 6 to 30 inches. Capacities run to 15,000 grm and 250 psi. Particularly applicable to bulk liquid transfer, cooling towers, dewatering and wherever suction is taken from an open source, they are available with open water-lubricated, or enclosed oil-lubricated shafts. INGERSOLL RAND COMPANY, 11 BROADWAY, NEW YORK 4, NEW YORK.

Ratchet wrenches—of all sizes are described in a highly-illustrated 8-page booklet from **Lowell Wrench Company, Lowell, Mass.** Two pages show broken-down views of Series 10, 20, 30, 40 and 50 "Red Ratchet" wrenches along with a concise replacement parts table and current list prices for parts. Reversing shipper on both face and socket types is actuated on a solid bushing.

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ENGINEERING NEWS-RECORD

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NEW HEAT IN THE SOUTH—A night view of the Sloss Blast furnace just outside downtown Birmingham, Ala., where pig iron is made, typifies the spirit of a new and dynamic southland where industrialization leads the nation.

The emergent South

If an observer was to fly south at high altitude, he would notice a group of states lying between and away from the Atlantic Coast and the Mississippi River, fortunate to touch either water of commerce in small degree. These are the states of Alabama, Georgia, Tennessee, Kentucky and West Virginia.

They are probably deeper south than coastal or river sections. But there the winged observer could soon see a stirring of activity, resulting from an awakening to the necessity and the potentials of balancing an otherwise largely agrarian economy with supplemental industrial undertakings.

• **Statistics aplenty**—Digging into the masses of material collected in the files of ENGINEERING NEWS-RECORD, he could emerge with some telling statistics, for even in the deep, less publicized south (often characterized as "slow") progress is going forward at a great rate.

Just look at the figures:

Engineering construction contracts for the year 1950 were up over 1949 by some 51% from coast to coast. But leading all comers was the South with its giant increase of almost 100%. Even in dollar volume of work undertaken, the South scarcely took second place. It led all regions with the exception of the heavily industrialized states of the Middle Atlantic.

Leaders by right of favorable geographical location were the states bordering the ocean or the Mississippi River. Leader of the inland, less favored region, was Alabama.

• **Alabama story**—Some of this state's achievements, especially in decade 1939 to 1949 and in 1950 make a good record, for Alabama, like the deep south, has a story. But in the decade since that time progress has been startling. A 100% gain in physical output of manufactured goods is just one symbol of growth. Dollar value is another indicator, for dollarwise the growth was roughly four fold (from $574,700,000 to $2,049,000 in 1949). This was more than keeping abreast of the rest of the United States.

In new plant facilities this has meant a dizzying turn. Contrast 1949 with 1939 when industrial plants contracted for totaled only $36,940,000 as against $96,481,000, a difference of 160%.

• **Bigger dreams**—Now there are plans ahead for further industrial building as of this June amounting to $31,883,000,000. This is nearly twice the industrial building of West Virginia. For all types of construction in the "middle South" the state is exceeded in backlog only by Georgia (by a slight margin) and by Tennessee where a large backlog of planned construction has accumulated over the past few years for want of carry through.

In terms of things less hypothetical than plans, Alabama was letting new contracts for buildings at a rate exceeding 1949 by more than 50% in 1950. This in contrast with Tennessee which dropped 50%, or Georgia, up 26%.

Better yet is 1951. By the end of June, total construction contracts let well exceeded last year's totals in Alabama. Right now construction contracts let are progressing at an annual rate of $295,338,000, an increase of more than 200%.

This represents, during the last quarter, projects such as the 160-mile, $9,850,000 natural gas pipeline of the Texas Eastern Transmission Co. which will stretch through the state and across Mississippi.

Out of this increasing movement forward on the construction front, with its opportunity for creative engineering and lucrative building, and its promise of a brighter future for its citizens emerges a more balanced economic kaleidoscope to spark an ever expanding and increasingly dynamic and awakened south.

Masterbuilt Floor in Hinde & Dauch Paper Co. Box Plant, Richmond, Va. Archt.—Carneal & Johnston; General Contr.—Doyle & Russell—both of Richmond, Va.; Floor Contr.—The Vannier Co., Buffalo, N. Y.

4-6 Times Longer Floor Life with the MASTERPLATE "Iron-Clad" Concrete Floor

The good performance of Masterbuilt iron armored concrete floors in two other Hinde & Dauch plants resulted in the company's decision to install this modern industrial floor in the fine new plant shown above.

Long floor life — 4 to 6 times greater than the best plain concrete floor — is only one of the reasons why many million square feet of Masterplate Floors have been installed in plants of all types during the past twenty years.

In addition to great wear resistance, Masterplate Floors have the following advantages:

- SPARK RESISTANT†
- STATIC DISSEMINATING†
- NON-SLIP FINISH
- NON-DUSTING
- EASY-TO-CLEAN
- CORROSION RESISTANT
- BUILT-IN-COLOR — NON-COLORED AND 11 ATTRACTIVE COLORS
- LOW COST

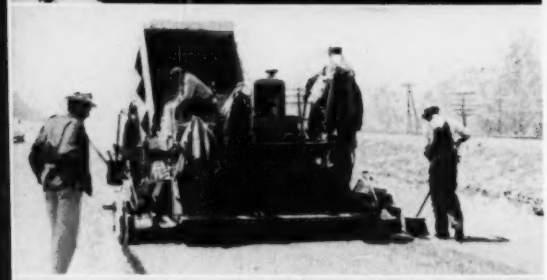
† spark-safe floors with 1.0 to 1.25 lbs. Masterplate per square foot of floor.

These advantages of the Masterplate Floor result from the *thick* iron-concrete armorplate produced by embedding specially processed, size-graded iron particles, combined with Master Builders' cement dispersing agent, in the *surface* of concrete while still in a plastic condition.

Ask for full information and pictorial directions on Masterplate for new floors and resurfacing old concrete floors; also free floor survey.

the MASTER BUILDERS Co.

CLEVELAND 3, OHIO — Subsidiary of American-Marietta Company — TORONTO, ONTARIO



Adapting yesterday's highways to today's traffic at minimum cost

One of America's most serious handicaps is the large and steadily growing mileage of its highways which are inadequate for today's traffic. The country and its road builders are confronted with the need for a large scale highway modernization program on the one hand, and limited funds with which to perform this vitally important job on the other.

In this situation, it is imperative that available highway dollars be expended so as to deliver the maximum road mileage capable of coping with today's traffic.

The State of Texas recently demonstrated how this can be done in a project involving the improvement of 20 miles of heavily traveled U. S. 90 between Houston and Beaumont. The State Highway Department widened the existing 20-feet-wide concrete pavement to 24½ feet, using hot-mix, hot-laid Texaco Asphaltic Concrete, laid in four courses to a compacted thickness of 10 inches. Over the full width of widened highway, 3½ inches of resilient, heavy-duty Texaco Asphaltic Concrete was then laid in three courses.

By this method, which effects a substantial saving over entirely new construction, Texas has successfully speeded the flow of traffic on U. S. 90, with greatly increased safety and riding comfort.

Two helpful booklets describing all types of Asphalt construction can be obtained by writing our nearest office.

PHOTOGRAPHS show method of laying and compacting 4½-foot-wide Texaco Asphaltic Concrete addition to old pavement, laid in four courses totaling 10 inches thick. Other photos show the 3½-inch Texaco Asphaltic Concrete wearing surface under construction. Bottom photo shows completed project, except for shoulders and striping. Traffic averages 5,700 vehicles a day, 31 percent of them commercial.

Contractor: Gulf Bitulithic Company of Houston, Texas.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO

REG. T. M.

TEXACO ASPHALT